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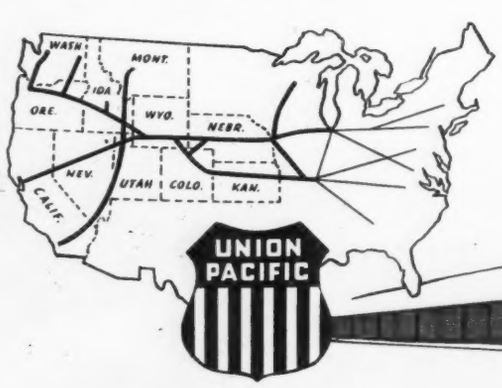

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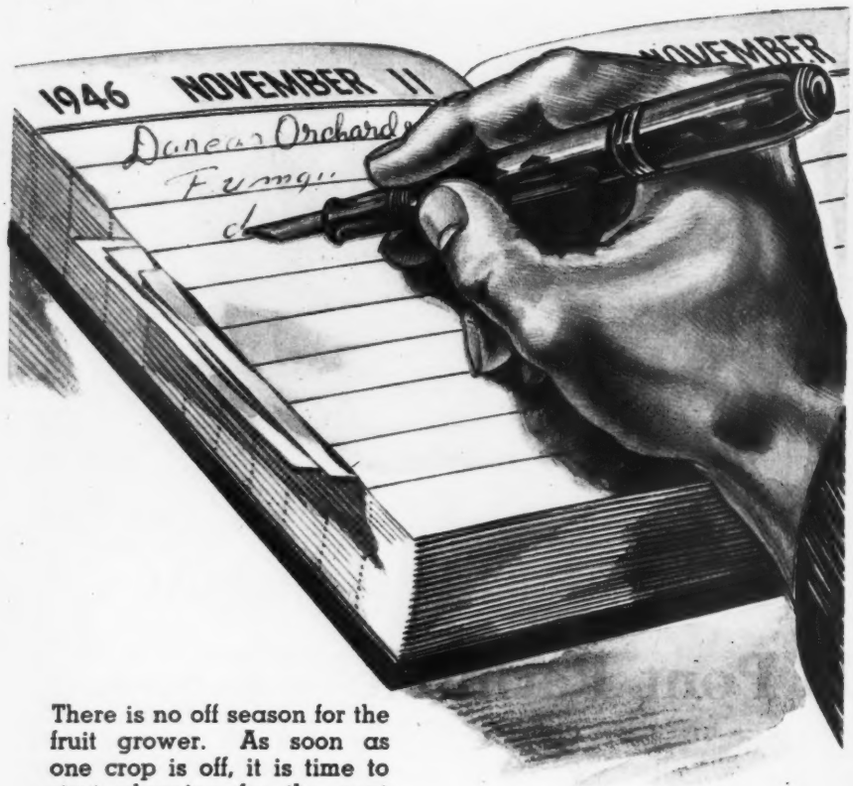

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CALIFORNIA SPRAY-CHEMICAL CORPORATION
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LETTERS TO THE EDITOR

Westerner Wants Eastern Apples

Gentlemen:

I have been a subscriber for a good many years, and I just want to say that I like your letters from the people fine—it sure gives a fellow a chance to speak his mind.

Now I want to know why those Eastern people never send any of their Northern Spy or Stayman or any of their good winter apples out West.

I am a native of New England, and I know what a Northern Spy and Baldwin and McIntosh is like. Yes, we have plenty of apples out here, but there is a big difference in the taste of Eastern and Western apples.

I am what you call an apple eater and it takes 30 bushels generally to carry us through the winter.

Pueblo, Colorado — F. P. DeVitt

The question of whether Eastern or Western apples taste best is one open to much debate—and we don't want to start such an argument now. Perhaps some of our readers would like to say something to Mr. DeVitt about this matter.

It would seem that the only way for Mr. DeVitt to get his apples would be to order them directly from some Eastern grower. Perhaps some cross-shipping of apples from East to West would be a good thing for both growers.—Ed.

Apple Trees Do Not Bloom

Dear Sir:

I have two Red Delicious apple trees that are about 6 or 7 years old that never bear fruit; they don't even bloom. What can I do about it so that they would have apples? They are from a good nursery, and grafted. I have other Delicious trees that are younger, and they have fruit, and come from the same nursery.

I also have an Italian standard plum that is 4 years old and it does not bloom or bear fruit.

Cedar Rapids, Iowa — Joseph Tichy

Red Delicious is one of the most difficult varieties of apples to grow and bring into high productivity. So your difficulty is a common one. It would be impossible to say with certainty just what is the cause of your trees not bearing fruit, since a number of factors may be involved. It could be that they are growing too rapidly, are too vegetative and consequently are not in proper condition to form flowers. This frequently happens when trees grow very rapidly. Try to keep this tree in moderate growth—about 10 or 20 inches of growth per year is satisfactory.

Sometimes ringing or scoring is practiced to bring trees into fruiting. You may do this by using a knife and cutting a ring around the base of the main branches, cutting clear through the bark into the wood. You can make two of these scores about an inch apart on each branch. This should be done as soon as possible now, but is best done early in the spring—about April.

Give your Italian prune tree a couple of years, and I think it will bear some fruit. It is sometimes difficult to bring into good bearing and fruiting.—Ed.

Brown Rot on Plums

Dear Sir:

I have a few plum trees in bearing age, and have an abundance of fruit, but the plums are destroyed by brown rot. I have tried spraying with different fungicides but find none that will spread on the surface of a plum. I have tried some of the various soap flake preparations in the spray mixture as well as "Spread-Rite," a Sherwin-Williams product.

Ripley, Ohio — F. W. Pabst

Sulphur or copper fungicides are the best controls for brown rot on all stone fruits. The so-called fixed coppers have found wide use on plums in Eastern states, although bordeaux or wettable sulphur will control the disease satisfactorily.

The first application should be made just after the shucks fall from the expanding fruits and a second one about ten days later. A spray of wettable sulphur should then be applied about 3 weeks before harvest time, and another 7 to 10 days before picking. The early sprays are important in controlling the beginning of the rot, while the latter two are applied to keep the rot from spreading.

The materials mix readily with water, and adhere satisfactorily to the fruit. You may use a spreader if you wish. I do not think the spreaders you used were at fault—they work when needed. Your need was for a controlled spray program rather than a spreader.—Ed.

Planting Apple Trees

Dear Sir:

I am planting about two dozen apple trees. I understand the practice is to head them low about 30 inches from the ground. I would like to head mine high enough so I could walk under the branches, thereby making it easy to work the ground underneath and between for vegetables and flowers.

If I did, would I regret it later on when I found it harder to spray and pick the fruit? The measurements to my ground makes it convenient to space them 30 feet each way. Would that be too close for a small orchard? I will not be able to use all the land at present, and would like to plant kudzu as a ground cover on part of it. Would kudzu be too rank for the young trees? There are two large oak trees about 75 years old 20 feet from my orchard site. Their roots extend 50 feet or more and drain the soil, so that I cannot raise anything near them. Would it be feasible to dig a trench between them and the orchard and fill it with concrete, thus stopping the roots from coming across?

Takoma Park, Md. — Willis J. Hirst

Ordinarily apple trees are set about 40 feet apart, but 30 feet, I think, will be satisfactory under your conditions. When one year whips are used at planting, they are usually headed back to about 30 inches from the ground. This induces branching the first year in the orchard. Then, during the following years you select the branches you wish to leave to form the framework of the tree. The point is to keep the lateral branches well-spaced around the tree and up the trunk. From 4 to 6 laterals are usually left. This should allow you to work between the rows. When the limbs spread out on the grown tree, there will be too much shade for a crop to grow under the trees.

Kudzu has been used as an orchard cover crop with satisfaction, and should serve your purpose.

Probably the best thing to do with the oak trees is to cut them down, but I know you do not want to do this. Your concrete wall about 4 feet into the ground is perhaps the next best thing to do, but keep it 15 or 20 feet from your apple trees.—Ed.

150-Year Old Gravenstein

Gentlemen:

In reading through the May issue of the AMERICAN FRUIT GROWER, I came upon the article of the oldest apple tree in the Northwest, which was very interesting.

I have what has been claimed to be the oldest tree in the country, planted in 1796—29 years older than the one mentioned in the article. I hope I can send you some apples from my tree this year when they are ripe, and the frost lets them live.

Phoenixville, Pa. — Morris Abner Barr

Mr. Barr has inclosed a great many letters from eminent men in horticulture and fruit growing praising this worthy tree.

Letters from the American Pomological Society and the Pennsylvania State College as well as Stark Brothers Nurseries also spoke highly of this venerable tree.

The tree was planted while George Washington was president of the United States, and is still bearing fruit.

If you measure the tree around the trunk, the tape goes out to twelve feet, ten inches.

For years the trunk has been hollow where decayed wood has been removed. Through a natural opening in the trunk, a big man may enter, and four other men can follow him inside the opening, with not a part of their bodies remaining outside.

Mr. Barr has suggested that the opening in the tree would make an appropriate setting for a wedding, with all the rich experience and abundant production of fine fruit this great tree has.

A great grandmother once wrote Mr. Barr for cuttings of the tree. She could not come to see the tree, so she wanted a living scion from the tree. Mr. Barr sent it, and two years later, the great grandmother wrote again, saying that she had a cluster of blossoms on the scion, and expected fruit from the grafting.

A very interesting story, and a wonderful tree. Perhaps some of our readers can add stories such as this to our columns. We would be glad to hear from any one who can.—Ed.

The 150 year old gravenstein tree, showing an opening in the side of the trunk where a man can walk into the tree. Insert shows fruit of the tree.

A mulch reduces the competition of the trees and the sod for moisture.

CULTURAL SYSTEMS FOR PEACHES VARY

DEPEND ON LOCATION

Certain Basic Rules Apply To All Soils and Climates

By LEON HAVIS, U.S. Plant Industry Station
Beltsville, Maryland

THE first thought in selecting a cultural system for the peach orchard must be this—What system will give the best yield of good peaches? We usually think in terms of 15 to 20 years for the peach orchard, and then we want useful land after the orchard is pulled. Therefore, in addition to a productive orchard, we should consider the conservation of the soil. Then, if the peach culture question is as simple as that, why is there so much lack of agreement in experimental results and observations, also in recommendations of research and extension men as well as of best growers? It's the old story—conditions vary. Food for one man may be poison to another. In spite of soil and climatic differences, however, there are certain basic rules which have evolved from many observations and a number of experiments.

No tree fruit is affected more by the lack of available soil moisture and available nitrogen than is the peach. At certain times of the year the effects of low nitrogen and moisture are more pronounced than at others. Peach trees root extensively, and after they are about 5 years old the roots of trees planted 20 feet apart may meet one another. A cover crop competes with the tree for soil nutrients and moisture. The greatest amount of plant growth from a cover crop can usually be obtained during early and midsummer; however, we should remember that this is also the time when most peach tree and fruit growth takes place. Our original purpose was to produce high yields of good peaches. Should we sacrifice our peach crop, or take a chance on it, for the sake of a good cover crop? Sometimes it may be unavoidable, but we will agree that we want as little of this competition as possible.

Since there are disadvantages from cover crops, then why not simply use a clean-culture system of management in the peach orchard in cases where there is no soil erosion? In some instances that may be the best thing to do. In a loamy type of soil, well supplied with the small particles of silt and clay, there seems to be little benefit from the organic matter in raising the available moisture content. In addition to soil erosion control, the greatest value of organic matter in the peach orchard is certainly its effect on the physical structure of the soil, and this benefit is greatest in soils that are either too light or too heavy. In a light soil the organic matter adds very small particles which are valuable in maintaining the availability of plant nutrients. Furthermore, light sandy soils are significantly increased in available moisture content by the addition of organic matter. Heavy soils are made more porous, and thus the aeration and water penetration are facilitated.

Cultivation results in a breakdown of the soil organic matter, and thus in a release of nutrients in it. The release of available nitrogen by cultivation often results in as much stimulation of the trees as does an application of fertilizer. Before the advent of cheap nitrogenous fertilizers, cultivation was valuable for this purpose. Now, however, it is usually preferable to add the nitrogen from the bag and keep the organic matter on or in the soil as long as possible. Only in this way can we expect it to be of most value for its principal purposes—erosion control, water and air penetration, and improvement in general physical structure.

Peaches can be grown very well in pure, coarse sand. It has often been done experimentally. All that is neces-

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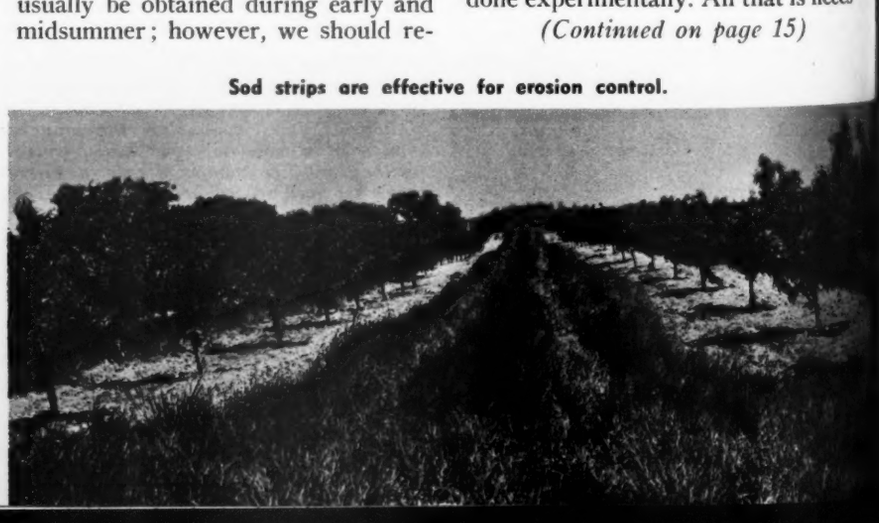
Sod strips are effective for erosion control.



Peach tree injured by the San Jose scale. Several branches have been killed.

PEACH INSECTS AND THEIR CONTROL

By OLIVER I. SNAPP

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

THE peach is attacked by many different insects. In the peach-growing states east of the Rocky Mountains the most important of these are the peachtree borer, the plum curculio, the San Jose scale, and the oriental fruit moth.

The Peachtree Borer

The peachtree borer every year, directly or indirectly, causes the death of many peach trees of all ages in both home and commercial orchards. The injury is done by the larvae, which feed on the cambium or growing tissues and inner bark of the tree, usually on the trunk just below the surface of the soil, although the larger roots are occasionally attacked. Young trees are sometimes completely girdled by the insect, and older trees are often so severely injured that their vitality is lowered and their resistance to other insects and diseases is reduced. The work of the borers is usually indicated by the presence of a mass of gum, particles of bark, and frass at the base of the tree.

Peachtree borers can be controlled with paradichlorobenzene crystals, ethylene dichloride emulsion, or propylene dichloride emulsion. The paradichlorobenzene treatment sometimes causes injury to young trees, especially in the South, whereas the emulsions are comparatively safe on trees of all ages when applied at the proper strength and in the proper manner. Treatment should be made in the fall at the end of the egg-laying period. The paradichlorobenzene crystals should be applied in a continuous band about 1 or 1½ inches wide around the base of the tree, about 1 or 1½ inches from the trunk. For trees of average size 6 years of age and older, 1 ounce should be used per tree; for unusually large trees, 1½ ounces or more is sometimes needed; for trees 4 and 5 years old, ¾ ounce is sufficient. After the chemical is in place, several shovelfuls of soil free from stones, sticks, and trash should be placed over it in the form of a low cone-shaped mound and packed with the back of a shovel.

The emulsions are applied either by pouring or spraying them on the soil close to the base of the tree. They should not be poured or sprayed on the trunk. The following strengths and dosages (per tree) of ethylene dichloride emulsion have been found by experiment to be most satisfactory: For trees 4 years of age and older, ½ pint of 20%; 3-year-old trees, ½ pint of 15%; 2-year-old trees, ¼ pint of 15%; 1-year-old trees, ⅛ pint of 7.5%. Propylene dichloride emulsion will control the peachtree borer at half the strength recommended for ethylene dichloride emulsion. After the emulsions have been applied, several shovelfuls of soil should be placed against the tree to prevent evaporation from the surface.

The Plum Curculio

The plum curculio, or peach worm, as it is frequently called by peach growers, is the most destructive insect pest that directly attacks the peach fruit in the eastern part of the United States. The adult females injure the fruit by puncturing it for egg laying, and the result is a wormy peach; in addition, the adults of both sexes cause gnarly fruit by making punctures for feeding. When control measures are not used, sometimes more than half the peaches are wormy or gnarled. Not only does the curculio damage the peach directly, but the rupture of the skin for feeding or egg laying furnishes a place for the brown rot fungus to enter. Many infections of brown rot in peaches start in this manner.

Spraying with lead arsenate, when thoroughly done at the right times, has been found to give adequate protection from the curculio in all but the most severe infestations. The program to be followed depends on the seasonal history of the insect in the particular locality. This insect is most troublesome in the South, where it is two-brooded, and in that region lead arsenate should be used at petal-fall, shuck-off, and 4 weeks before ripening.

When unusually severe infestations of the plum curculio develop, other control measures must supplement the

(Continued on page 16)

Applying ethylene-dichloride emulsion by pouring with a household measuring cup.

Jarring peach trees to capture adult curculios.

STONE FRUITS AFFECTED BY 50 KNOWN VIRUS DISEASES

Vary From Killing Trees To No Apparent Effect on Growth

By Donald Cation, Michigan State College

THERE are about fifty known virus diseases of stone fruits. They vary in their effect on the tree and their propensity for spreading in the orchard. Some diseases are so violent that the infected trees soon die, while a few others are so mild that they do not appear to retard yield or impair tree growth, or even the quality of the fruit. There are different degrees of severity found between these two extremes.

Viruses also vary in the reactions they cause on different species or even different varieties of fruit. Peach yellows reacts rather severely on all known peach varieties and a few plums, but Myrobolan and other plums can carry the virus indefinitely without showing symptoms. Similarly sweet cherry may become infected with Cherry yellows without showing visible indications.

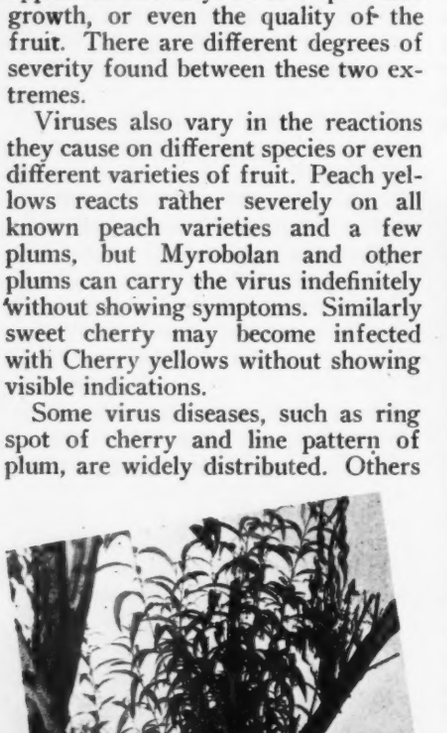
Some virus diseases, such as ring spot of cherry and line pattern of plum, are widely distributed. Others are sectional, such as phony peach in the south, peach mosaic in the West, and peach yellows group in the Northeastern United States. A few diseases are restricted to a limited locality, such as Southern peach rosette. A few diseases are so rare that they have involved only a few known trees in but one or two orchards.

Virus diseases tend to fall into definite groups. For instance peach yellows, little peach and red suture are thought to be closely related, having the same incubation period, practically equal thermal death points and the first two at least have only one known and the same insect vector. Cherry yellows, prune dwarf, and rosette mosaic produce rather similar reactions on peach, enough to indicate they are perhaps strains of the same disease. Western X disease of peach and buckskin of sweet cherry are also reported to react rather characteristically on peach. Peach mosaic is known to occur as several distinct strains, with slightly different characteristics. Mild reacting strains of this disease are known which will immunize against a severe strain, suggesting a relation similar to that of cow pox and small pox in human disease.

Virus diseases are recognized by the symptoms they produce. Some are outstanding and unmistakable, some vague and confused with other possible causes. The proof of a virus disease is its infectiousness and absence of visible causative parasites. Virus symptoms vary with the disease but may include mottling of the leaves, with indefinite dark and light areas, or ring spots, (light colored rings or halos). The ring spot areas may die and are then called necrotic ring spots. Yellowing, wilting, death of leaves,

Left, peach inoculated by budding into a diseased sweet cherry. Right, peach budding with healthy sweet cherry. An example of indexing.

Masked ring spot of cherry is detected by inoculating peach in August. Left, die back evident June 1st of next season. Right, recovery shown by living sprouts on August 15.



Wire shoots typical of peach yellows, on peach inoculated with bud from a sick plum tree, carrying the virus.

X disease. Defoliation of all but the tip leaves gives symptoms known as lion tail.

shoots or areas in the cambium, early ripening and late ripening of fruit, deformed fruit, excessive sprouting, and leaves spaced abnormally close together known as rosetting, are some of the virus disease symptoms which might be encountered.

Winter injury, borers and other insect infestations, lack or excess of certain chemical components in the soil, hardpan, poor soil drainage, inadequate culture or unfavorable growing conditions may result in manifestations which simulate virus disease symptoms. On the other hand the symptoms of diseased trees have often been attributed to some of these causes and the trees allowed to remain in the orchard with consequent disease spread.

Diagnosis usually requires considerable experience and keen observation. Knowledge of how a healthy tree should react to a given environment is desirable. In Michigan peach virus inspectors are most familiar with peach yellows, little peach and red suture, but they are alerted to watch for other possible virus diseases. Systematic peach inspection begins about August 1 and continues through the ripening period as this is the time the peach yellows group of diseases is most easily detected. Peach yellows was notorious for its destructiveness in the past but this disease is only rarely encountered in Michigan in recent years. Little peach is more widespread and active in present day peach orchards. Cherry yellows is widespread in Michigan but not subject to compulsory removal of diseased trees. Symptoms of that disease are most apparent about six weeks after petal fall and are present for about a week, after which they tend to be obscure.

Peach mosaic is perhaps most readily detected early in the season, when delayed foliation, leaf mottling and distortion are most evident. Certain chemical treatments on bits of tissue which cause them to turn a characteristic color have been devised for phony peach and peach mosaic but are not known for indicating the other diseases.

The following characteristics serve to identify a few of the important virus diseases:—

Peach yellows: Foliage off color, wiry, sickly, yellow sprouts with small leaves, early ripening of fruit. Fruit with abnormal red splotches and red streaks in flesh.

Little peach: First a peculiar clustering of the leaves along a two-year-old sprout, frequently deeper green color than normal, fruit small and ripening later than normal. Advanced cases show smaller leaves and off-color foliage with general lack of vigor.

Red suture of peach: Clustering and drooping of leaves on two-year-old shoots, somewhat as in little peach. Foliage in mass assumes faint bronze tinge, best compared with adjacent normal green healthy trees. Fruit ripens earliest on suture side and may be rough and bumpy.

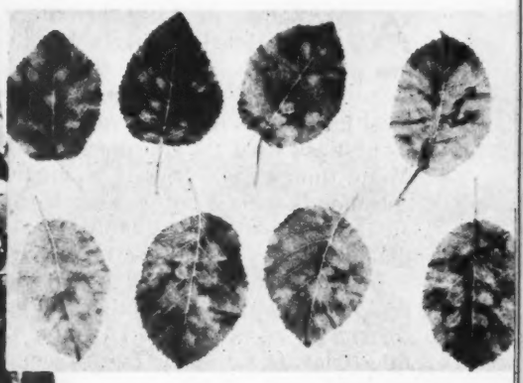
Red suture symptoms: clustering and drooping of foliage on two year old sprout.

Cherry yellows: A varying amount of leaves turn mottled yellow and green about six weeks after petal fall. Affected leaves fall to the ground, frequently including some rather green leaves. The tree may display no more symptoms in that year. The tree is gradually reduced in yield and vigor, bears fewer fruits but these are of good size and quality.

"X" disease of peach: In late June leaves show red and yellow blotches, the leaves finally showing dead spots or areas. The dead tissue falls out of the leaves and the limbs defoliate, leaving a few young leaves at the tips of bare branches.

Control

The control of virus diseases is complicated by the relatively long incubation period (that period between inoculation and the first appearance of symptoms) and also the masking of symptoms by some species and varieties of stone fruits. For instance, prune dwarf may be carried and appear harmless on Damson plum but is severe on Italian prune. Sweet cherries may carry yellows virus without showing symptoms. This is known as masking. Some plums may mask peach yellows, prune dwarf, rosette mosaic, line pattern and perhaps cherry yellows. Sour cherry may mask the symptoms of cherry yellows in years when the spring season is warm. The symptoms are masked or not readily apparent in August at the time. propagation wood is selected.



Green ring yellows of cherry produces ring mottle on Mahalebstock sprout.

Little peach—Top branch of inoculated tree showing first symptoms; thick, clustered, dark green foliage.

Control of the peach yellows group of diseases still rests on the removal of diseased trees as soon as they are detected. This is to avoid further spread. In addition, one spray of nicotine applied to all peaches and neighboring plums about three weeks after petal fall should prevent spread by destroying the vector, *Macropsis trimaculata*, a leaf hopper. No doubt DDT sprays will prove to be as efficacious toward eradicating this and perhaps other possible vectors of virus diseases. One should remember, however, that the results of insect eradication should not be expected to show up until the second year after spraying.

The control of "X" disease in the East is as simple as destroying all of the chokecherries within a 500-foot radius of the orchard. No chokecherries, no "X" disease. This rule does not seem to pertain to the form of the disease found in the western states.

Some peach growers have never experienced virus diseases. Others are in locations which seem to be natural harbors for specific diseases. In such locations year after year of eradication serves to keep the disease under relatively good control, with the disease exacting greater toll in epidemic years.

Peach rosette is so quickly destructive to the tree that little time is allowed for spread and the disease has never become generally established. It

(Continued on page 20)

HANDLING TREE-RIPENED PEACHES

By M. J. DORSEY

University of Illinois

AT the outset, let's take a look at the problem of handling the peach crop from the standpoint of those most intimately concerned with it. Let us first ask what the consumer wants. Many things could be said about the consumer's wants, but I think it can all be summed up by simply stating that everybody would prefer to have a peach taken from the tree at the peak of its quality. In other words, the consumer would select, if free to do so, exactly the kind of peach a grower, a buyer, or a shipper would prefer if he were free to choose from peaches of a wide range of quality, maturity and firmness. The grower, at the other end of the spectrum, would, if free to act, pick when the fruit had reached a high degree of color, was firm and well rounded up. From experience he knows that firmness is a primary factor in getting the crop to the consumer. All of those who deal with the peach, between these two extremes, look upon safety in handling as a primary factor. They demand a fairly firm peach as one of the principles of safety. They are less inclined to look at the peach crop from either the consumer's or the grower's angle, if grade and firmness are right.

Crop Storage Life

Let us now look at the crop from the standpoint of maturity, carrying capacity and storage life. We are all familiar with the fact that as the peach matures on the tree it gains in size, color and quality. If the grower were free to choose, there is much to be gained both from consumer acceptance and volume by leaving the peaches on the tree until they reach the firm-ripe stage. Events at harvest time in the peach orchard are fast moving. The grower has, at best, a limited period to do a big job, and he is inclined to play the game safe from his angle by picking as early as possible, in spite of the fact that some volume is lost in early picking. On the other hand, one of the primary factors for the grower to realize is that once a peach is taken from the tree, its quality limits are determined. It must then be disposed of in some way. The time element between picking and consumption may be a few hours or it may be weeks. It is of the utmost importance to realize that temperature control determines to a very large extent the latitude the trade may have in getting the crop from the orchard to the consumer. Physiological studies show that a peach will ripen about as much in one day if held at 90 degrees or so as it will in 10 days or two weeks if held at 32 degrees. The ripening process must, then, first be thought of in terms of the temperature level, whether the fruit be held in a basket under the tree, in a hot packing shed, or taken on a long haul to the railroad station. Once it is packed and entered into the car, the temperature level of the fruit itself determines the ripening rate. Iced cars and precooled shipments at the proper temperature level need not be too much of a factor in the storage life of the fruit.

Once a peach is taken from the tree, its quality limits are determined. U.S.D.A. photo by Forsythe.

Other Factors Enter

On the other hand, other things come into the picture in getting the fruit from the orchard to the consumer in good condition. Assuming that the picking stage has been correct, the kind of handling the peach has received all along the line, the kind of package or container it has been placed in, the riding qualities of the conveyor, whether truck, train or airplane, as well as the firmness of flesh of the variety all come into the picture.

Perhaps we have been attempting to step up the carrying capacity of the peach too largely by early picking, when, as a matter of fact, all of these other things may be important. Very fortunately, when the temperatures are controlled to the point where the ripening process is retarded properly, the storage rots are also held in check.

Let us take up some of these items one by one. What is happening in the orchard when a picking crate is filled with nice cool fruit from the first picking in the morning and set in the shade? Naturally, the maturing processes which were taking place while the fruit was on the tree are now in check and the ripening processes set in. As the morning temperatures rise and the fruit passes from the shade to the sun, the grower is responsible for a period of exposure to high temperatures of varying lengths. The haul to the shed supplements this high temperature exposure in the orchard. At the shed the fruit is still softening while it is being held for the grader, and as it goes across the grader, into the basket and on to the truck.

Fruit Exposed To Shock?

Regardless of the temperature at which the fruit may be held, the handling it receives starts with the way in which the fruit is poured into the field crate from the picking con-

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Orchard of seedling trees from known parents.

SOME PRESENT AND FUTURE NEEDS IN PEACH BREEDING

by M. A. BLAKE, New Jersey Experiment Station

IN any region in the United States where peaches can be grown successfully and economically, the major cultural problem is a satisfactory variety or varieties. When consumers or processors of fruits no longer want a variety, no amount of cultural skill or publicity can make it a profitable variety to grow. Consumer and market demands are continually changing and more rapidly now than in the past. Production costs for pest control, harvesting, packing, and marketing are increasing. The wholesale markets demand a peach that has size and color and above everything else one that can successfully withstand the present methods of distribution and handling to the final phase of sale to the consumer. Some varieties do not attain anywhere near their best edible condition unless they remain on the tree until almost ripe. Such varieties are unlikely to be suited to distant shipment but may be excellent for local markets and trade.

Some home canners of peaches may prefer a peach with considerable red color in the flesh about the pit. The flesh of such varieties, however, is likely to assume a purplish red or a brownish red shade after they have been canned a while. Commercial canners do not want such varieties and some home canners object to the color. Home canners in the eastern states demand freestone peaches but in some other sections clingstones are wanted. Commercial canners in general demand a peach with a nonmelting flesh and thus prefer varieties of the Phillips Cling, Peake, Palora, or Ambergem type.

Left — Seedling peach trees from known crosses growing in the nursery.

Above—A good crop of peaches obtained from controlled breeding.

It is most unlikely that any one or two varieties of peaches from the fruit standpoint alone will please all consumers or even be adapted to all uses or demands. It also tends to be in the direction of too much regimentation for the welfare of the industry. Some merchants would like to call every peach Elberta, even the white-fleshed ones, and some now do but such a policy stifles consumer interest. It does, of course, make the retail sales problem more simple. It tends to put peaches in the same class of commodities as potatoes, rice, and white dried beans where varieties are commonly ignored in sales talk.

Tree Requirements

The tree qualities of a variety are as important and even more so than the fruit qualities. If an excellent fruit is produced on a tree that lacks hardiness and productiveness, its fruit qualities will not save it from discard commercially. The J. H. Hale peach is a good commercial where the environment is favorable to the tree but it has a relatively narrow range of adaptability.

The peach regions of America extend from near the Gulf of Mexico to Lake Ontario and from the East to the West Coast. These districts experience a wide range of environmental and climatic conditions. No one or two varieties will be best for all districts from a hardiness standpoint alone. Even in New Jersey a variety that is satisfactory in southern New Jersey may not be satisfactory 60 miles to the north. Fruits of Golden Jubilee are likely to be flat-cheeked in a dry region, especially if the temperatures are high just before the ripening period. The fruits also ripen too rapidly if the temperature exceeds 90° F. for several days during the ripening period. In contrast, the cheeks of the fruits fill out well in a region where relatively cool and moist conditions prevail at ripening time. The fruits of Halehaven are less firm at maturity under some climatic conditions than others. For years the fact has been known that the European type varieties, formerly called

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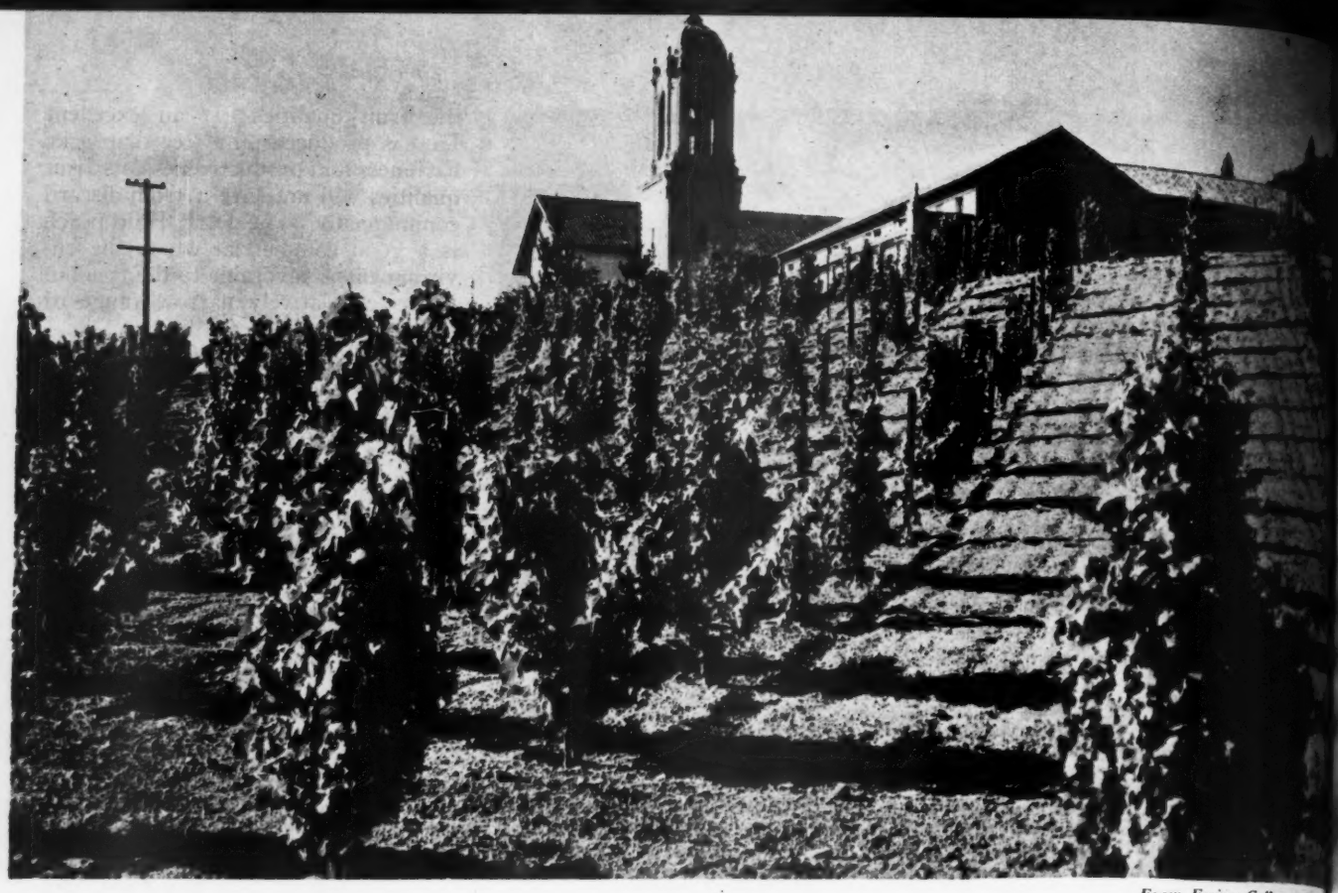


From Ewing Galloway

NATIONWIDE FRUITS

GRAPES

Grafting American Grapes

Varieties of American grapes when grafted on vigorous types of rootstocks have outyielded vines produced on their own roots in the conventional methods of layering or by cuttings. These have been the results of more than 40 years experience at the New York Experiment Station, Geneva, New York.

The late Professor S. A. Beach began the experimental work in 1902 and the late Professor F. E. Gladwin continued it in 1914 with another grafting experiment at the Fredonia Vineyard Laboratory.

Over a period of years the quality of the grapes produced on grafted vines has surpassed that of grapes fruited on their own roots. Not only has this been true, but those stocks which produced the greatest quantity of grapes produced also the highest quality.

A given rootstock does not give the same results with all varieties grafted on it. There is considerable variation in varietal response, just as is the case with stock-scion relations in other fruit plants.

In Professor Beach's experiments three stocks were used, Riparia Gloire and Rupestris St. George, both of French origin, and Clevener. He grafted 19 of the then important varieties of grapes on each of the rootstocks and compared each with vines produced on their own roots. Professor U. P. Hedrick published the results in 1912 showing that grafted grapes of American species were more productive than own-rooted vines. The grafted vines produced about a ton more per acre than the own-rooted vines.

Gladwin's results published in 1932 gave Clinton the best rootstock for Catawba, Campbell Early, Iona, Niagara and Delaware. The best stock for Concord on gravelly soils was Riparia Gloire, but on heavy clay soils Clinton gave the best results, almost 100 per cent increase in yield over own-rooted vines.

In 1936 another rootstock experiment was begun to determine the best one for the Delaware variety. Due to difficulties this test has been dropped. However, the results so far obtained indicate that rootstocks Nos. 3306, 3309 and 1202 are the most promising for Delaware.

There are commercial possibilities in growing grafted grapes. They present several disadvantages, but on the whole offer considerable more advantages than the old conventional propagation methods. The big difficulty now is getting enough grafted grapes started in commercial vineyards for large scale trials.

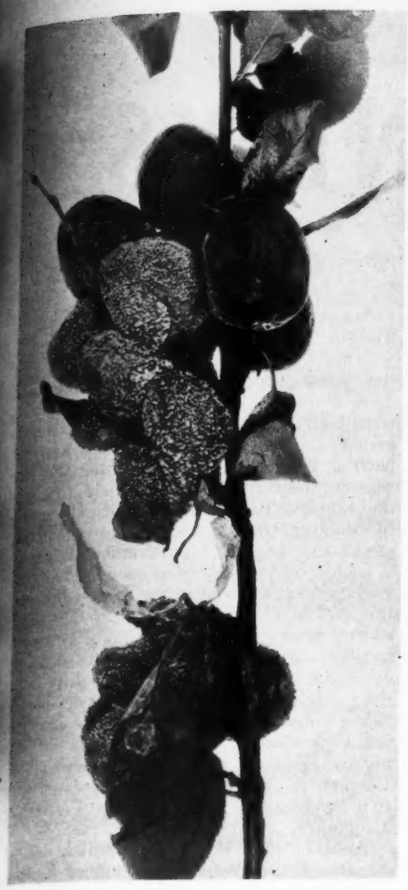
The Geneva station has just begun another trial to determine which of some 15 or 20 kinds of rootstocks are most suitable for Niagara and Concord. It is possible that they will find some quite superior to any yet tried.

PLUMS

Brown Rot of Plums

The rotting of plums at harvest frequently brings disappointment to the home fruit grower. This is ordinarily due to a disease known as brown rot, a name which pretty well describes the appearance of the fruit. The same disease also attacks peaches, cherries and other stone fruits.

Wet weather during July and August is an important contributing factor in causing brown rot. Therefore during the ripening period, the fruits should be kept covered with a good sulfur fungicide.



Plums infested with brown rot.

The first spray should be applied 10 days or 2 weeks before harvest time. Sometimes an application is applied about a week before this one if the weather is conducive to brown rot. If the weather is damp and rainy during the harvest season, it is also advisable to make a sulfur application at this time. Many commercial growers practice this and make a dust application.

Flotation sulfur is the most effective fungicide used at the rate of 8 pounds per 100 gallons of water. If this cannot be obtained, the next best is a dry wettable sulfur, used at the rate of 6 pounds per 100 gallons of water. If a dust is desired, as one for the harvest application, a 90-10 sulfur-lime mixture is recommended.

CITRUS

Dairies To Sell Orange Juice

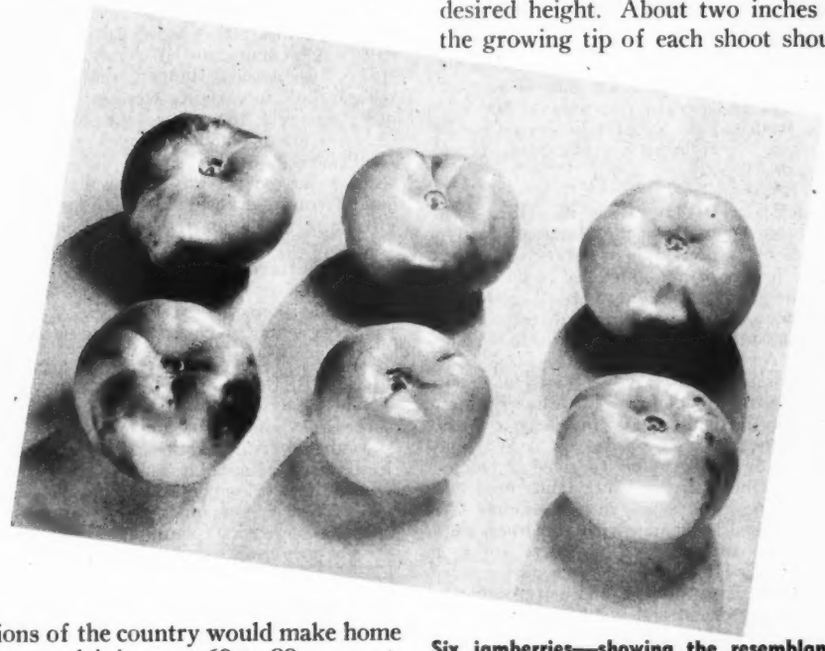
Now the consumer can pick up fresh bottles of orange juice—not orangeade—off his door step along with his morning's milk. Following three years experimentation, Green Spot, Inc., Los Angeles, processors of orangeade and fruit concentrates, has perfected a method of condensing orange juice so that it may be profitably distributed on a national scale throughout the dairy industry.

Unlike whole orange juice canned and sold through retail food channels, Green Spot orange juice is condensed and from the time it leaves the plant until it finds its way to the consumer it is constantly refrigerated to protect its Vitamin C potency.

Bulk-packed in enamel lined tins, it is shipped to dairy supply distributors who, in turn, sell to dairies. Dairies reconstitute it, adding sufficient water to bring it back to its original consistency, bottle cold and deliver to their wholesale and retail trade. Product is standardized by blending crops from various orchards so that sugar content remains constant. Only tree-ripened fruit is used.

By condensing, six No. 10 tins weigh only 51 pounds, representing the juice of one-third ton of fresh fruit. One carload of condensed tinned juice is equivalent to 18 carloads of fresh fruit.

Orange juice will retail at about 48c a quart at consumer's door. Present retail fresh orange prices in most sections of the country would make home squeezed juice cost 60 to 90c a quart. Secret of saving is the freight differential between condensed juice and fresh fruit. Plant capacity is 2 carloads daily, or 68,400 gallons of orange juice.



Six jamberries—showing the resemblance to tomatoes of this South American fruit. Photo from Farm Journal magazine.

JAMBERRIES

New Fruit From South America

From Ecuador, South America comes a new fruit for American gardens. It is known as the "Jamberry," and seems to have promise as an annual fruit plant for the home gardner.

Scientists of Iowa State College discovered this fruit growing wild in Ecuador and thought it might have possibilities in North American gardens. The berries are produced on a vine somewhat like a tomato, which must be started very early in the spring and transplanted sometime during the month of June. Little is known at present about the culture of this plant.

The red, purple or yellow fruits are about two inches in diameter and possess thin husks. It is reported that they make good pies and preserves or chili and pickles. The juice even makes a very palatable drink.

Since seed of the Jamberry will not be available for another year, gardeners will have to be patient in their efforts to grow this imported fruit.

BERRIES

Summer Pruning Brambles

For heavy production next year red and purple raspberries and blackberries should be pruned during the summer months. The first phase of this procedure is to cut the tips out of all young shoots when they reach the desired height. About two inches of the growing tip of each shoot should be removed. This causes the cane to send out many branches which in turn will produce the berries next year.

Black raspberries are usually topped when the shoots are from 18 to 24 inches high and purple raspberries and blackberries when from 24 to 30 inches high. The planting should be gone over each week during the summer in order to top all the shoots as they reach the desired height.

No topping is necessary with red raspberries.

A good time to prune out the old canes is just after harvest season is over. The canes which have borne the fruit this season are no longer of

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State NEWS

FLORIDA—The fifty-ninth annual meeting of the Florida State horticultural society elected the following officers: F. M. O'Byrne of Lake Wales, president; Frank Stirling and Ralph Thompson, vice-presidents; Frank Holland of Winter Haven, Treasurer; and Ralph Miller of Orlando, Secretary.

The convention had an opportunity to spend an afternoon with Dr. David Fairchild in the Fairchild Tropical Gardens.

KANSAS—The peach crop has never been more evenly distributed and has never been more promising than it is at the present time. The leading commercial varieties are Golden Jubilee, Hale Haven, Belle of Georgia, Champion, J. H. Hale, and Elberta. Mr. Emmett Blood, one of the largest growers, whose orchards are located in the Arkansas River Valley near Wichita, estimates he will harvest between 25,000 and 30,000 bushels. The growing season has been ideal, much thinning had to be done, the fruit is large for the season, and very free from insects and fungus.—*George W Kinkead, Secretary, Kansas State Horticultural Society.*

MARYLAND—Dr. Irvin C. Haut, who has been a member of the Horticultural Department, University of Maryland, since 1936, has been appointed as Head of that Department, succeeding Dr. Charles H. Mahoney, who has assumed directorship of raw products research with National Canners' Association, Washington, D.C.

Dr. Haut is a native of Mitchell, South Dakota, and completed his undergraduate work in horticulture at University of Idaho. He earned a Master's degree at Washington State College, and received a Doctorate at University of Maryland, then conducted research work at Oklahoma A. & M. College, working with tomatoes, potatoes, and strawberries. Since returning to Maryland, Dr. Haut has been active in research in fruit storage, maturity, nutrition, soil, management and raspberry breeding.—*A. F. Vierheller, Extension Horticulturist, University of Maryland, College Park.*

MINNESOTA—One of the most damaging frosts in the history of Minnesota occurred on May tenth and eleventh. The crop of tree fruits, grapes, currants, and gooseberries is practically wiped out except in well-protected areas. These areas are largely under the protection of river bluffs on easterly slopes in southeastern Minnesota, and to a lesser extent there was some protection in plantings close to lakes. In the most sheltered areas, especially along the Mississippi River, there are prospects for a good crop of currants, gooseberries, strawberries, and raspberries. There is no evidence of serious damage to tree fruits in these favored areas and a normal crop may be harvested. However, experienced growers are keeping their fingers crossed until after the middle of June because they remember the heavy June drop following the late frost last year. In the state as a whole the prospects are for fifty per cent of an average crop of strawberries and raspberries, although the damage is more severe in some localities.—*J. N. Winter, Secretary, Minnesota Fruit Growers Association.*

MONTANA—The fruit industry was severely injured by freezes in May. Apple crop will amount to only about ten percent of normal. Sour cherries probably about twenty-five percent of normal. Sweet cherries, while considerably injured, will probably amount to about fifty percent of a normal crop. Early blooming on first crop strawberries were also badly injured and first crop will be short. It is too early yet to estimate what the damage will amount to on the fruit still on the trees.—*George L. Knight, Secretary, Montana Horticultural Society.*

NEBRASKA—Fruit prospects in Nebraska are quite spotted. There was a heavy bloom nearly everywhere on all kinds of fruit. The freeze on May 9 and 10 caused considerable damage, though the new developing fruit blooms were hit worse. Grapes in low places were damaged up to 95% but on high sites there was less than 10%. Peaches are showing quite well although the late varieties were injured much more severely than were the early ones. Cherries are producing a good crop in the southeast part of the state. Apples are spotted but in general the crop will be fairly good. Growers are watching with interest the effects of DDT on the population of the Red Spider. Conditions up to now have been quite favorable for this pest on evergreens, but on fruit plants they have not yet made their appearance.—*E. H. Hoppert, Secretary, Nebraska State Horticultural Society.*

TENNESSEE—Strawberry growers of Tennessee have concluded one of their most successful seasons on record. This year saw the revival of the gala Strawberry Festivals at Humboldt and Portland. Other important developments were the increasing use of berries for quick-freeze processing, and the increasing plantings of three new varieties bred at the Tennessee Experiment Station.

In the field contest held in connection with the West Tennessee Strawberry Festival, John Pope, landowner, and J. B. Forsythe, tenant, of near Jackson were the champion growers. Denton Fly of Milan, who has been a consistent winner during the nine seasons the contest has been held, took second honors. Both of these fields, at the time of judging, had produced more than 250 crates per acre of U.S. Number 1 berries.

Fields of the new Tennessee Shipper variety were entered in the contest this year for the first time, and took some of the county prizes. It is finding favor as a companion variety to grow with Blakemore, extending the picking season a little later than Blakemore and often outyielding it. Some Gibson County growers are eliminating Blakemore altogether in favor of Tennessee Shipper, among them being J. A. Lowery of Trenton, who walked off with two sweepstakes honors at the Festival in Humboldt.

Another new variety, Tennessee Beauty, is attracting attention in Sumner County, where a crate entered by H. E. McGlothin took first prize in the contest at the Portland Strawberry Festival. Mr. McGlothin reports his Tennessee Beauty patch as yielding about double the amount of Blakemore grown alongside it. Its season is near that of the Aroma, which is no longer grown commercially in this area.

In the third important strawberry area of Tennessee, around Dayton and Spring City, where most of the fruit goes into the quick-freeze plants, the Tennessee Supreme variety was the star performer. While it is too soft for shipping, the Tennessee Supreme makes a particularly good quick-frozen product.—*J. C. McDaniel, State Horticulturist, Nashville*

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LESSONS IN ORCHARD CHEMISTRY

By E. D. WITMAN, Research Associate
Ohio State University Research Foundation

ARSENICAL "SAFENERS"

In previous "Lessons" the formation of water-soluble arsenic from insecticides such as lead and calcium arsenate and Paris green has been discussed. Such water-soluble arsenic, if present in high enough concentrations, results in injury to susceptible plants.

Since we are unable to prevent the formation of water-soluble arsenic the next best idea is to provide an additive agent to suppress it or absorb it in some manner. Lime has been used for this purpose for many years, and although not perfect, it still does an acceptable job. Actually, lime simply reacts with the water-soluble arsenic to form insoluble calcium arsenates.

One of the outstanding arsenical "safeners" is ordinary Bordeaux mixture. In this case, the water-soluble arsenic is probably converted to highly insoluble copper arsenates. Bordeaux, however, has limitations on its use, particularly on stone fruits.

A relatively new group of particularly effective "safening" agents are the insoluble compounds of zinc, such as "zinc Bordeaux," zinc hydrate, basic zinc carbonate, and in some cases, zinc oxide. Zinc Bordeaux may be formed in the spray tank by mixing zinc sulfate and lime, or it may be purchased as a proprietary dry powder. These zinc compounds remove water-soluble arsenic by changing it to insoluble zinc arsenates.

Not only are zinc compounds effective "safening" agents, but they frequently show evidence of plant stimulation.

Other "safening" agents, such as aluminum, iron and manganese "Bordeauxs" have not been widely used, since they have been shown to lower the toxicity of the arsenical to insects.

Left above—Rough disking is best for rye cover crop. Right above—Sweet clover competes for soil moisture. Right — A summer cover crop may be valuable in the peach orchard — even though it grows in competition with the trees.

PEACH CULTURAL SYSTEMS

(Continued from page 6)

sary is a constant supply of available nutrients and water, with sufficient aeration. Under orchard conditions we are not able to maintain such a constant nutrient, moisture, and air supply, and organic matter supplied by cover crops helps us maintain these conditions.

If, after a consideration of our own particular orchard soil, it is decided that a cover crop is advisable, either for soil erosion control or for other reasons, the next thought is what to use. As previously mentioned, a type of cover crop that does not seriously compete with the trees is preferable. The trees require least moisture and nutrients during the late fall and winter. A cover crop seeded in late summer that will grow during the fall or winter seems preferable. Rye or rye-and-vetch mixtures are used perhaps more than any other crop for that period. Sometimes crops that winterkill, such as spring oats, millet, or just weeds, are grown during the late summer or into the fall. They are allowed to remain on the surface and are disked down in early spring. If rye is used, it grows early in the spring, and should be disked roughly into the ground before it competes seriously with the trees for moisture and nutrients. Sometimes much of the value of the cover crop is lost by too thorough disking of the crop. From the standpoint of water penetration and soil erosion, there is considerable evidence that one should leave as much material on the soil surface as possible. The job may not appear well done when given only a rough disking and much of the plant material is left uncovered, but there is much justification for it.

There are some sites and soils where summer cover crops such as soybeans, cowpeas, and crotalaria should be grown in addition to a fall or winter crop. If soil erosion is fairly serious, it may be preferable to grow a crop that competes with the trees and perhaps reduces the fruit crop, rather than lose the soil. Some of these summer crops, such as late varieties of crotalaria and buckwheat, make most of their growth in the late summer after the medium-early peach varieties are harvested. Cover crops should be fertilized in accordance with the best practice in the area. Often a "complete" fertilizer is applied when the seed are planted. Perhaps I should mention the often-repeated statement on the advantage of legumes as cover crops in the addition of nitrogen to the soil. At the present cost of a bag of high-nitrogen fertilizer, I feel sure that growing legumes in the peach orchard is a far too expensive method of obtaining nitrogen.

The permanent-sod system of soil management for the peach orchard is sometimes worth considering. Several experiments and many observations, however, indicate that it should be avoided whenever feasible. If moisture is not likely to be limiting, either because of plenty of water or an extraordinarily deep soil, a permanent cover is sometimes satisfactory. In most sections of the eastern and southern United States moisture is sometimes seriously limited. Nutrients are also used by the sod, of course, but that is not so serious, since they may be added as fertilizer. While working at the Ohio Experiment Station several years ago, the writer concluded that in the deep soil at that Station peach trees could be grown in bluegrass sod just as well as in cultivation during most seasons, if enough nitrogen was applied. Trees in the sod required about three times the amount of nitrogen necessary for those under cultivation. Soil-management studies here at the Plant Industry Station over a period of 12 years have shown some advantage of cultivation during the summer over a summer cover crop. There was considerable advantage in the annual cover-crop system over a semipermanent sod of sweet clover or of lespedeza. Soil moisture seemed to be the principal limiting factor here. Even mature trees were affected. A mulch is helpful for moisture conservation in the sodded peach orchard, but we should remember that peach trees root extensively and the sod may still compete for moisture with the tree roots 12 to 15 feet away from the tree trunk. Another modification of the continuous-sod system is that of disking up the sod well every few years. Still another is the use of sod strips between wide peach rows, which are cultivated along each side. There is the advantage of the sod strips across the slope to prevent erosion, and the cultivated strips near the tree reduce serious competition. These sodded strips are also useful for moving sprayers and harvesting equipment, especially during wet weather. The sod strips should be fertilized and mowed occasionally.

There has been a trend toward less cultivation for peaches than was the case 15 years ago, and that change is surely justified. Nevertheless, there are evidently only a few regions where a continuous sod over the entire area would not often materially reduce the tree and fruit growth. Some management system in between these two extremes can usually be worked out. For best results, the system to be used for each orchard should be considered as an individual problem. Soil and moisture losses are still too easily over-

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PEACH INSECTS AND THEIR CONTROL

(Continued from page 7)

arsenical treatments. These measures include jarring the trees to collect the adult curculios, collecting drops to prevent the development of adults from larvae in the fallen peaches, disking under the spread of the trees to destroy pupae in the soil, eliminating places of adult hibernation, and post-harvest dusting with lead arsenate.

The San Jose Scale

The San Jose scale takes its nourishment by sucking the sap from the trees, and in this way is responsible for the death of many peach trees each year. The first indication of direct injury to peach trees from this scale is the killing of limbs or branches. An incrusted branch is readily distinguishable by its characteristic grayish appearance and by the yellow, oily secretion seen when the scales are scraped off with a knife. The feeding of the insect frequently stunts and weakens a peach tree to such an extent that it is especially subject to attacks by other pests. The San Jose scale may be controlled by spraying the trees thoroughly with either lime-sulfur or oil during the dormant season. Lubricating-oil emulsions should be used at a strength of 3 per cent of actual oil, and miscible oil should be used at the strength recommended on the manufacturer's label, usually from 4 to 6 per cent. Lime-sulfur should be used in the proportion of 1 part of the concentrate to 7 parts of water.

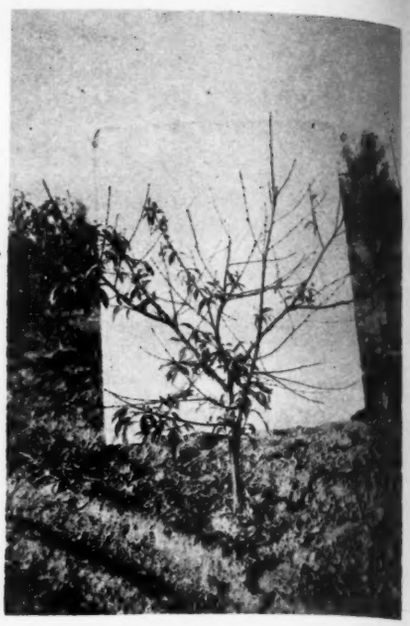
The Oriental Fruit Moth

The larvae of the oriental fruit moth damages both the twigs and the fruit of the peach. The twig injury, which occurs chiefly in the early part of the season, may interfere seriously with the growth of young trees, giving them a stunted, bushy appearance. The injury to the fruit is somewhat similar to that caused by the larvae of the plum curculio. The use of parasites is generally recognized as being valuable in checking injury from this insect. The usual insecticides have proved ineffective, although recent experiments with DDT indicate that this material offers much promise as a control measure for the oriental fruit moth.

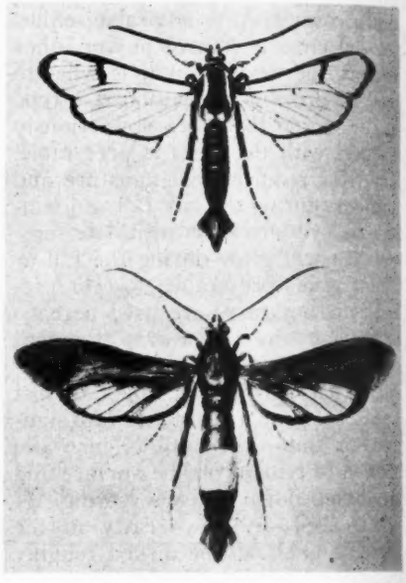
Plum curculios on small peach.

Other Peach Insects

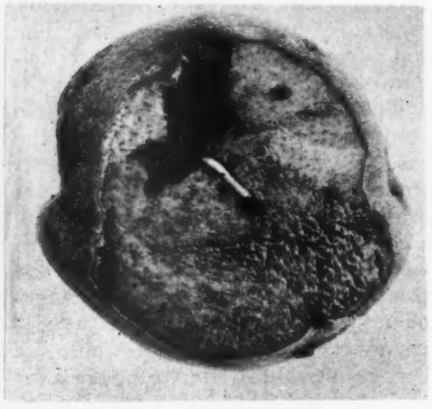
Among other peach insects of less importance are the sucking bugs that cause deformed peaches, and against which DDT is effective, and the lesser peach borer that attacks the tree above ground and which can be controlled with paradichlorobenzene dissolved with crude cottonseed oil.



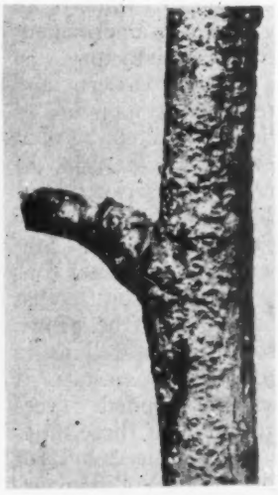
Peach tree inoculated with cherry containing a ring spot virus. Initial die back will be followed by recovery.



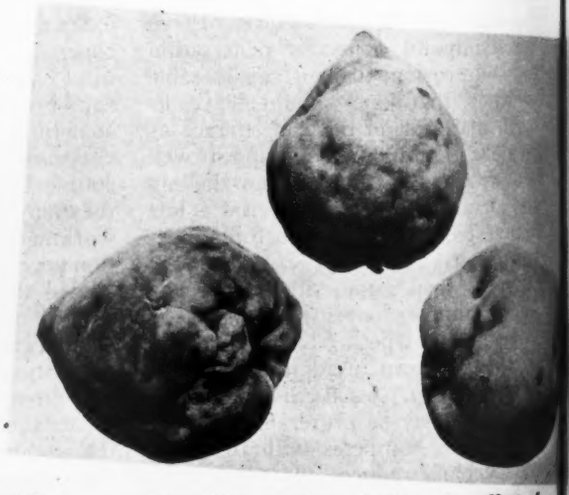
Peach tree borer adults.



Larva of the oriental fruit moth working in a peach.



A peach twig infested with the San Jose scale. Five times natural size.



Ripe Hiley peaches showing the effect of attack by leaf-footed bugs several months before.

NEEDS IN BREEDING PEACHES

(Continued from page 11)

Persian, do not do well as a rule in the South. A variety that is susceptible to bacterial leaf spot may be satisfactory in one region but not in another. And so the illustrations of the need for specific varieties for special uses could be multiplied.

Varietal Demand Changes

In general, no one variety of peach remains as a popular commercial variety for more than 25 to 30 years. A few have exceeded that, of course, but the trend is for change. In 1914 the approved list of commercial varieties for New Jersey included Greensboro, Carman, Hiley, Champion, Belle, and Elberta. This list was rather generally acceptable for a considerable portion of the Atlantic coast peach region. Today only one of these varieties, Elberta, is planted commercially in New Jersey.

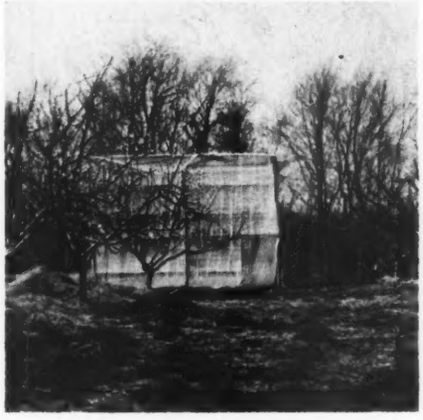
Where are all of the new varieties, required to meet future needs of the various districts, to come from? Chance seedlings were once the common source but such a haphazard procedure is inadequate for modern times. Breeding is the only dependable method of assuring the industry of suitable varieties.

Facts About Breeding

When the breeding of any plant is first undertaken, one of the most essential fundamentals is a study of the inheritance and linkage of characters. Just crossing varieties without any knowledge of the inheritance of characters is just a gamble. It requires at least 4 or 5 years to make a cross and bring the trees into good bearing. It requires several more years to really evaluate the merits of any new seedling. If it is necessary to make a second generation cross in order to obtain the desired combination of characters, the time required may easily extend to from 18 to 20 years. As many as 1,000 to 5,000 seedlings have been grown and fruited without obtaining a single individual of sufficient merit for commercial planting. It is expensive to provide commercial culture for even 1,000 peach trees for 7 to 8 years and then discard all of them.

Breeding for better commercial varieties, therefore, requires first special training and ability to judge peach entities and to know how to combine the desired ones. In the second place, it requires large numbers of trees, land, and equipment to provide good cultural care. Last but not least in importance is the ability of the breeder to judge the response and behavior of each seedling to such factors of environment as soil type, temperature, soil and air moisture, light, nutrient balance, resistance to disease, or in other words to evaluate its "physiological I.Q." so to speak. It is necessary then to combine these factors with external tree and fruit characters and make a decision without too prolonged or too widely scattered orchard tests.

Any marked improvement in our commercial varieties by breeding first requires suitable parents. Unless a desired character is inherited by the present available varieties, it cannot be obtained by the breeding of those varieties. It is the experience of the author that the known commercial varieties of any fruit are satisfactory as parents at the start of a breeding program or for phase 1 but seldom for phase 2. Such varieties as Dewey, Slappey, Greensboro, Belle, Elberta, J. H. Hale, and Chili were acceptable as parents when peach breeding was in phase 1 in New Jersey but are no longer used. The forward-looking, efficient breeder must breed the parents before he can hope to breed the desired commercial varieties. Wild or new types of peaches introduced by the Foreign Seed and Plant Introduction Bureau may possess one desired new character but combined with several undesirable characters. It may require 2 or 3 generations to get the one desirable character in such a linkage with other characters that it is worth anything as a parent for commercial varieties. In other words, it may require not less than from 10 to 20 years just to obtain the required parentage to secure a certain desired improvement in commercial varieties.



A peach tree covered with a cheesecloth tent for breeding.

Breeding Commercial Varieties

Certain rather immediate improvements in commercial varieties of peaches can be secured by the use of varieties already available as parents. In order to obtain rather prompt results, however, it is necessary for the breeder to have a pattern of the kind of variety he aims to breed. This includes the tree and fruit characters and those associated with season of ripening and the environment or regional conditions in which the variety is to be grown.

An example of character standards or goals for a varietal entity for a yellow-fleshed peach to ripen 10 days after Elberta is given here. Vigor is recommended as equal to Belle. The latter variety does not develop as large or as upright a tree as the true Late Crawford but it is big enough and is quite adaptable. Golden Jubilee sets 20 or more buds to the foot of twig growth in New Jersey. Cumberland exceeds it and a goal of 32 buds per foot can be set if one prefers that many.

All the characters of a new variety are unlikely to rate as high as the breeder desires. However, unless one has a mental pattern of the variety and character standards to be attained, good progress in breeding cannot be expected.

Peach Character Standards for a New Variety

Character	*Equal to*	*Character*	*Equal to*
Vigor	Belle	Red Skin Color	Sunhigh
Winter Hardiness	Chili	Yellow Skin Color	P. I. 35201
Spring Hardiness	Eclipse	Flesh Firmness	J. H. Hale
Adaptability	Elberta	Fruits Hang to Tree	Triogem
Bud Set	Golden Jubilee	Adhesion	Freestone
Brown Rot (Resistance)	Elberta	Flesh Color	Fireglow
Bacterial Spot (Resistance)	Hiley	Canned Product	Up-to-Date
		Frozen Product	Fireglow
Fruit Size	Elberta	Acidity	Titratable 9
Pubescence	J. H. Hale	Flavor	Fireglow

NATION-WIDE FRUITS, BERRIES

(Continued from page 13)

any value and the sooner they are removed the better. It lessens the winter pruning job.

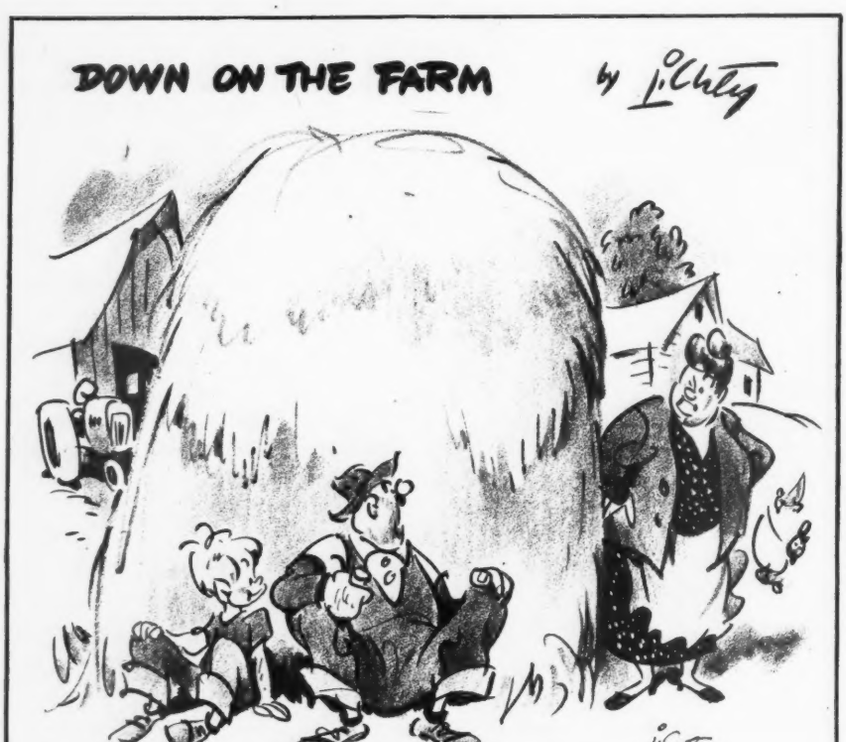
New Pacific Coast Berries

Development of new fruit varieties is becoming more specific with each passing year. Varieties suitable to one set of environmental conditions will not do their best under another set. The Pacific Coast represents a distinctly different set of climatic conditions than any other spot in the United States. Therefore it is not surprising that we find the growers and experiment stations of this great fruit section clamoring for new and improved varieties suited especially for their conditions.

The California experiment station has originated several strawberry varieties among which five are most outstanding: Shasta, Sierra, Lassen, Tahoe and Donner. From the Oregon station has come one of the most promising Pacific Coast berries, the Brightmore.

The Oregon station has also produced a very promising red raspberry, the Willamette, which is reported excellent for freezing. The Puyallup station in Washington has introduced the red raspberry, Washington, a berry of true merit, and gaining in commercial acreage. The Tahoma, another Puyallup introduction, is slightly earlier than the Washington variety but is very promising.

These are all new fruits introduced for culture under conditions as near like those of the place of origination as possible. They should be tried under those conditions if the grower expects to obtain berries meeting the claims of the varieties as originated.



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An advertisement of B. F. Goodrich — First in Rubber

PEACH CULTURE

(Continued from page 15)

looked and we are wise to take a chance of sometimes reducing the peach growth for the sake of soil conservation. Peach tree growth is usually not affected by late-summer and fall growth of such crops as rye. While the trees are quite young, summer cover crops can also be grown without seriously affecting the trees, if not planted too close to them.

It should be emphasized that soil and moisture conservation in the peach orchard is very important. Often contour planting is necessary. Sometimes a layout of terraces is essential in addition to the contours. Much depends on the soil type, amount and distribution of rainfall as well as the percentage slope of the land. These factors vary considerably in different parts of the country. The local county Agricultural Agent and Soil Conservation Service can be helpful in planning and laying out a system of terraces and contours. It is much better to plan the layout of such a system before rather than after the orchard is planted.

In fertilizing the peach orchard, nitrogen remains the chief element necessary to apply to most soils. Potassium is perhaps the next important element likely to give response in the care of peaches. The elements necessary, as well as the amounts, vary so widely that no general recommendation can be made for all soils. We have seen very satisfactory results with ammonium nitrate, sodium nitrate, or ammonium sulfate applied either in the fall or early spring. Relatively small amounts of ammonium nitrate are necessary, because of its high nitrogen content. The addition of large amounts of nitrogen may, of course, reduce the color and delay the time of fruit ripening. In general, the later it is applied the more effect it has on color and ripening. Soon, I think, we shall not be so concerned about color, since, from our breeding work, we are obtaining varieties that color well under high-nitrogen conditions. Some growers take advantage of the delay in fruit ripening caused by high nitrogen as a means of extending the ripening season.

Winter injury to trees is another factor often associated with cultural and fertilizer treatments. The winter-injury problem is complicated, however, because there are several types and several different conditions may be responsible. In both the northern and southern peach regions, however, the least damage seems to occur in trees of moderate vigor that have not been weakened by poor drainage, loss of leaves, borers, nematodes, or other such factors.

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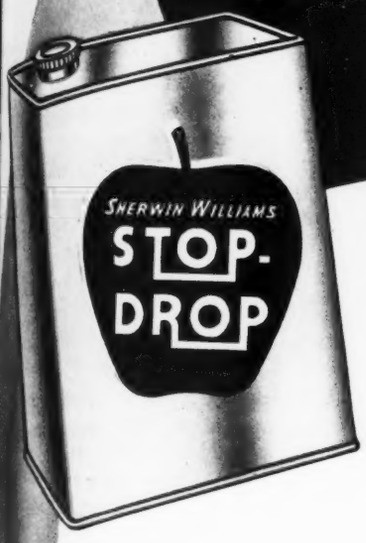

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MIDDLEPORT, NEW YORK

STONE FRUITS

(Continued from page 9)

is said to be self-controlled. On the other hand sour cherry yellows is slower in its action and as it developed unrecognized for some years there are now very few orchards in Michigan entirely clean. Some older orchards are so largely infected and the disease is so widespread that tree removal is not yet considered advisable until more is known about the disease. In such cases present recommendations suggest that the grower maintain the orchard until it becomes unprofitable, removing only the worthless trees and not replanting in the vacancies. In young orchards, however, diseased trees should be removed and replaced as diseased young trees cannot be expected to grow into profitable specimens. If these measures are not taken the grower will gradually become aware that the orchard is losing money or perhaps just making expenses just at the time it should be at peak production.

When virus diseases are recognized to be making serious inroads into the fruit-growing business and when control by the individual grower gets out of hand, then state and federal agencies usually take over with eradication and quarantine measures. Phoney peach and peach mosaic have required intense federal and state eradication campaigns to bring them under control.

Control Begins at Nursery

The control of some virus diseases must begin in the nurseries as nursery stock can account for widespread dissemination of these diseases. Nurserymen can no longer select propagation wood from innocent-looking trees with any assurance that the tree is not carrying a harmful virus disease. Each propagator should either become familiar with the complicated methods of detecting the various virus diseases or rely on a plant pathologist to make the necessary determinations. This is particularly true for cherry yellows and other obscure diseases.

Knowledge of fruit virus diseases is increasing. With the establishment of basic facts regarding earlier recognition, masking carriers, insect vectors and manner of spread we should soon be ready to apply intelligent control measures with greater hope for longer lived, more productive orchards.

HISTORY OF HORTICULTURE

PETER M. GIDEON PIONEER NUT GROWER

By W. G. BRIERLEY
University Farm, St. Paul, Minnesota

MENTION of the name of Peter M. Gideon in Minnesota usually recalls his interest in growing seedling fruits and his introduction of the Wealthy apple and other less well known varieties. That he also was interested in growing nut trees seems to have escaped mention. A search through reports of the Minnesota Horticultural Society published in Gideon's time and later, failed to reveal any comments or reports by Gideon or any reference to his work with nut trees. Within the last few years, however, an interesting story has been gradually unfolding to show that Gideon was one of the pioneers in the introduction and cultivation of nut trees in Minnesota.

His Trees Still Grow

In the spring of 1944 a group of hickory trees were located close to the highway at Manitou on the old Gideon homestead. There were twelve large trees and four smaller ones growing around cottages on the site. The older trees were in broken rows giving the impression they might have been planted originally in uniform rows. Some of the larger trees were 16 inches or more in trunk diameter and ranged up to at least 35 feet in height. All but two of the trees were representatives of the northern shagbark hickory, Carya ovata, native of Winona and Houston Counties but not commonly found elsewhere in the state. Under one tree, however, some very large nuts were found. This tree 13 inches in trunk diameter and 35 feet high, has been identified as a specimen of Carya laciniosa variously known as the Shellbark, Southern Shagbark, or King Nut hickory. This tree, although growing far north of its native range, was a vigorous, healthy specimen and showed no evidence of winter injury. In the fall of 1945, another tree that did not bear in 1944 was found to be of the laciniosa species, and a third tree has been identified as a hybrid.

Through a series of contacts with people who had lived in the cottages on the site, information as to the age and origin of the trees was at length obtained from Mr. C. Leroy Kimports, now living in Georgia. He stated in a letter that when he purchased the cottage site in 1908 there was a "nicely laid out grove" that already was bearing nuts. He was told that the trees had been planted by Peter Gideon. When the cottages were built many of the trees were removed, but those that were left showed some of the original rows.

Curiosity Kept Alive

So the story had partially unfolded, but many missing items kept curiosity and interest active. Frequent inquiries finally led to a pleasant visit in the fall of 1944 at the home of Mr. E. W. Becker on the Minnetonka shore near the Gideon homestead. Although 86 years old, Mr. Becker readily recalled incidents and dates relating to the time when as a youth he worked for Peter Gideon. Many missing items furnished by Mr. Becker completed the story of the Gideon hickories.

Mr. Becker told how Gideon brought the nuts back from a trip to his old home near Clinton, Illinois, in the fall of 1878. The nuts were planted in the spring of 1879 in check rows "like corn in a field," where they grew to make a thick stand. The trees were too crowded for best development but Mr. Becker recalled that Gideon found some of them bearing nuts before he died in 1899. As the site was sold only a few years after the nuts were planted, and as Gideon became less active with increased age, Mr. Becker said that Gideon did not pay much attention to the trees after the site was sold. Possibly this explains the failure of Gideon to mention nut planting in his reports.

Story Finally Completed

Further information obtained from Mr. Becker revealed more of Gideon's interest in nut growing. The row of butternuts along the lake shore drive and some black walnuts located not far distant on the west side of the "Narrows" road were planted by Gideon "At least as early as the seed that produced the Wealthy apple." So they probably were planted about 1860 and now are at least 85 years old. Thus, after long search, the story was completed and it was definitely established that the hickories, black walnuts and butternuts were planted by Peter Gideon.

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HANDLING TREE-RIPENED PEACHES

(Continued from page 10)

After picking, the peach goes through a series of shocks in handling which affect its consumer acceptance.

tainer. From then on the peach is exposed to a series of shocks which constantly lower its consumer acceptance. While the package itself has much to do with the way the fruit comes through this ordeal, nevertheless peaches can be handled so that no package would furnish adequate protection. It would certainly be clear, that in loading the bushel basket in the truck or in the car, the fruit itself supports a large part of the weight of the load. It is at this point that some of the newer packs, such as the box, the individual cell type of container, or set-in container units, come into the picture.

Comparison of Varieties

Suppose we compare the carrying capacity of Elberta picked at the firm-ripe stage (that is, within four days or so of becoming soft on the tree) with some of the other varieties, such as J. H. Hale, which is one of the best shipping varieties of all the freestones thus far developed. It would seem that in the variety itself the grower would have considerable leeway, and it is unfortunate that J. H. Hale is not more productive.

With the package, handling, and variety thus brought to the fore, let us note briefly how much leeway the peach grower has at best in getting Elberta from the orchard to the consumer. If we start out with a day's delay at the orchard, that includes picking, hauling to the shed, packing and placing in the car, quite a bit of the holding capacity of the fruit may be lost. If the shipment is not precooled and brought down to pretty low levels during transit, which may extend over a period of one to four days or more, the fruit goes through the ripening process at a rate determined very largely by the temperature level of the car or truck. On arrival at the market the fruit is again exposed to higher temperatures on its way through the distribution channels. At best, when held at the proper temperatures, varieties like Elberta most seasons begin to lose quality at the end of two or three weeks, if held at 32 degrees F., so it can be seen that, in handling, all along the line we are really running a race with the physiological processes.

Reaching Toward Great Market

We are reaching the point in our planting where one of these years, with all the regions hitting, we can expect a hundred-million-bushel peach crop. If and when that happens, we shall have to take full advantage of the ability of the entire nation to eat peaches. Many markets not adequately reached by good peaches will have to be sought out and supplied. Attention will have to be given all along the line to better handling, and especially to not clog up the markets with fruit with low consumer appeal. It will be some time, probably, before we will be able to handle peaches like nails, but we certainly handle nails at the present time in a better package, relatively, than we do peaches. In the end we may expect improvement in temperature control, care in handling and hauling, better packages, the production of varieties with better carrying qualities and a longer storage life as the way out. Students of the peach situation may well keep their eyes on the evolution that is taking place backstage in processing, better packages, and varieties with better carrying qualities which are coming out of the breeding plots.

IN THE NEWS

T. A. MERRILL

The new head of the Department of Horticulture at Washington State College, Pullman, Washington, is a native of Utah, and graduated from Utah State College in 1930.

T. A. MERRILL

He went to Michigan State College for graduate work where he spent considerable time at the South Haven Experiment Station obtaining field experience and carrying on detailed experiments with blueberries, peaches, soil problems, and general horticultural work.

He became a member of the Michigan State College staff in 1935, and then went to Fredonia, N.Y. to take charge of a grape station located there. He returned to Michigan in 1943, and has remained there.

Mr. Merrill has been popular at gatherings of fruit growers. Good judgment, horticultural common sense, and sincerity of purpose are characteristic of him, according to his co-workers.

DR. RALPH A. VAN METER

Dr. Ralph A. Van Meter has recently been appointed acting President of Massachusetts State College. He has headed the School of Horticulture there, and is well-known throughout the horticultural world.

DR. VAN METER

He has been with the college since 1917 when he was in the department of Pomology. In 1932 he became head of the division of Horticulture.

A native of Ohio, he got a bachelor of science degree at Ohio State University in 1917, and did graduate work at Cornell where he received a Ph. D. in 1935.

He is active in Massachusetts horticultural organizations, and is a member of the Board of Directors of the American Pomological Society.

HERBERT F. McFEELY

A specialist in fruit and vegetable marketing, Mr. McFeely is now a member of the Pennsylvania State College staff.

He has had long experience in the field in Federal-State fruit marketing and news services. He comes to Penn State from Rutgers University, where he served as a member of the New Jersey extension staff.

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NUT GROWER NEWS

NUT GROWERS HOLD CONVENTION AT WOOSTER

THE Northern Nut Growers' Association will hold their convention this year at the Ohio Agricultural Experiment Station, Wooster, Ohio, September 3-4, with a field trip the 5th.

A program has been planned to include topics of interest on various phases of nut culture. Discussions of personal nut growing problems will be invited from the floor. The field trip will include the plantings there at Wooster and adjacent towns where trees and groves are located which are of interest to the group.

Wooster Is Centrally Located

Wooster was selected for the convention this year because it is almost centrally located for the majority of our members. We have not held conventions during the war because of travel restrictions, but we have printed and distributed our annual report each year, which contains usually over 100 pages, nicely printed and bound, with illustrations. The report of this convention will comprise our 37th annual report. Our membership has grown to well over 600, and it is expected this convention will be well attended. It is urged that hotel reservations be made promptly. If you are not a member and are interested, information on hotels and the printed program will be sent on request.

All who are interested in nut culture should plan to attend this meeting.

Northern Nut Growers' Assn.
Mildred M. Jones, Sec'y,
Lancaster, Penn.

BOOK REVIEW

Grapes and Wines From Home Vineyards by U. P. Hedrick

This book, by the author of Fruits for the Home Garden, is written for those Americans, growing in number each year, who are learning to make wines and want more information on the subject. Dr. Hedrick, who has been planting grapes in experimental vineyards and associating with wine-makers for fifty years, believes that excellent wines can be made at home.

Part I of the book deals with leading species of American grapes, with the possibilities of the many varieties considered.

Part II is devoted to a discussion of American wines. Each step is explained in the making of many wines, with complete information on equipment needed, and the care of wines.

•

Man and the Soil by Karl B. Mickey

This book has been published by the International Harvester Company, and is an introduction to the study of soil conservation.

Mr. Mickey discusses the subject from all angles—from a social standpoint to the historical implications of soil erosion.

An excellent book that gives a very good appreciation of the many factors involved in soil erosion, and the importance of soil conservation to combat the erosion. The book is free.

•

Luther Burbank, A Victim of Hero Worship

This book is Vol. 9, number 5/6 of Chronica Botanica ($3.75) is an evaluation of the life and works of a man whose real value has been overshadowed by controversy.

Walter Howard, Ph. D. at the University of California has approached the subject without prejudice, and has drawn a clear picture of Luther Burbank and what he has done. Howard has made no attempt to glorify Burbank, nor any attempt to debunk him.

His book is a complete study of Burbank as a man, a breeder of new varieties and his place in American Horticulture.

•

Jim Brown's Farm and Home Fence Handbook contains many valuable hints on erection, measuring, setting, stretching, splicing and bracing fences. 25 cents per copy.

MATHEWS

Portable Wheel Conveyers

LIGHT · STRONG · ECONOMICAL

These strong, moderately priced sections are available in 5′ and 10′ lengths, and with 8, 10, or 12 wheels per foot. 45° and 90° Curves and attractive Tripod Supports are standard accessories. The Type 115 Wheel is of the highest quality, the result of 40 years of Mathews experience in conveyer bearing and wheel manufacture. Universal Couplings make sections easy to set up and take down. New bulletin and prices available immediately upon request.

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FOR SALE—DOGS OF THE HUNTING BREEDS. Coon, Opossum, Mink, Squirrel, Fox, Rabbit dogs. Judged by appearance. Ten days trial. Write for literature and conditions of sale. Prices reasonable. J. N. RYAN KENNEL, Murray, Kentucky.

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CORRESPONDENCE COURSES AND SELF-INSTRUCTION books slightly used. Sold, Rented, Exchanged. All subjects. Satisfaction guaranteed. Cash paid for used courses. Complete information and 100-page illustrated bargain catalog FREE! Write—NELSON COMPANY, Dept. 2-65, Chicago 5, Illinois.

FOR SALE—EQUIPMENT & SUPPLIES

ONE WAYLAND APPLE SIZER IN EXCELLENT RUNning condition. Capacity 600 bushels daily. Single phase electric motor. Complete in every respect. CLAUDE M. BAILEY, Fo'Castle Farm, Burnt Hills, Saratoga County, New York.

TRACTOR PARTS, NEW AND USED. ALL MAKES, satisfaction guaranteed, dependable service. Write for free catalogue. BURLINGTON TRACTOR WRECKING COMPANY, Burlington, Iowa.

STRAWBERRY GROWERS ATTENTION! To get large crops of fancy berries, remove surplus runners the fast, easy way with a Duplex Rotary Clipper. Folder Free. HENRY A. CONGDON, Kingston, R. I.

"GARD" ELECTRIC—FLY TRAPS, INSECT KILLERS, Fans, Clocks, Hot Plates, Heaters, Dept. AFG, GARDENHOUR MFG. CO., Waynesboro, Pa.

FOR SALE, IMMEDIATE DELIVERY, new apple graders complete with receiving conveyor, cull eliminator, polisher, roller picking table, and two sizing units to give three commercial sizes of apples. Also new 400 bushel capacity peach graders complete with defuzzer. Write HAMILTON COMPANY, Ephrata, Lancaster County, Pa.

FOR IMMEDIATE DELIVERY, REMOVABLE LINE rubber stamp sets, apple, peach and pear graders complete for small and large growers, power conveyors for packing house and storages, gravity conveyors, warehouse trucks, basket liners, corrugated caps, irrigation systems complete, row crop and orchard dusters, and many other items for grower and packer. MICHIGAN ORCHARD SUPPLY COMPANY, South Haven, Michigan.

FOR SALE: CIDER PRESSES AND SUPPLIES, APple and peach Electro Magnetic Sizers. W. G. RUNKLES MACHINERY COMPANY, 185 Oakland Street, Trenton, New Jersey.

KILL ALL WEEDS WITH 2000 DEGREE FLAME, FAmous fire gun sterilizes, thaws, incinerates, disinfects. Works like blow torch, burns kerosene, mostly air. Economical, safe, sure. Free literature tells how. Write SINE EQUIPMENT, AFG 1, Quakertown, Pa.

APPLE GRADER, POLISHER, ¾ horse motor. First $110.00. Bargain. JOHN SLOAN, Route 2, Sicklerville, New Jersey.

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MALE HELP WANTED

WANTED EXPERIENCED FRUIT FARM FOREMAN. Modern farm, best housing. One mile from village. Real opportunity for right man. M. S. HAZEN, Milton, New York.

OPPORTUNITY OF LIFETIME SUPPLYING DDT AND other Profitable products to farmers. No experience or capital required. Must have Auto and good references. Permanent. Write or wire McNESS Company, Dept. 705, Freeport, Illinois.

ORCHARD MAN WITH THOROUGH KNOWLEDGE OF apple culture. An opportunity for high type man with one of the largest commercial orchards in Ohio. Give full particulars first letter. WRITE AMERICAN FRUIT GROWER, Box 54, 1370 Ontario Street, Cleveland 13, Ohio.

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TRE-TEX saves Trees from rabbits, mice, tree borers, scab and winter kill. Applied like varnish to any tree. $1 package, 100-150 trees, last year. Unused portion never spoils. RESULTS GUARANTEED. Sold in thirty states. Trademark registered May 8, 1946. E. L. ECKERLEY, ORCHARDVIEW, Noblesville, Indiana.

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TARPAULINS, WATERPROOF, GUARANTEED weight, government standard. 6x8—$4.40, 8x10—$8.80, 10x12—$11.80, 12x16—$19.50, 15x30—$28.50, 25% deposit, balance C.O.D. THOMPSON BROS. Pine Castle, Florida.

ENGLISH SPARROWS EAT AND DESTROY FRUIT. Make your own trap that will catch thousands. Write for details. ROY VAIL, La Grange 24, Indiana.

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NORTHERN SELECTED, STATE INSPECTED, strawberry plants, Aroma, Aberdeen, Blakemore, Beaver, Catskill, Dellmar, Dorsett, Fairfax, Senator Dunlap, Maytime, Robinson, Red Star, 100-$3.25; 250-$7.50; 500-$14.50. Gem, Minnesota No. 1166, Mastodon, (everbearing), 25-$2.10; 50-$3.80; 100-$6.15. Viking, Latham, Chief, Newburg raspberry plants, 10-$1.50; 25-$3.50; 100-$13.50, prepaid. BRULE VALLEY NURSERIES, Brule, Wisconsin.

PEACH TREES GROWN ON 100% NATURAL MOUNain Grown Tennessee Seedling Seed. Strong, more disease resistant fast growing trees. Standard Commercial varieties including Dixired and Sullivan Early. Prices low if order is early. CONGER'S NURSERIES, Smithville, Tennessee.

DEPENDABLE FRUIT AND NUT TREES, SMALL fruits, Ornaments, and General Nursery Stock Combined catalogue and Planting Guide free. CUMBERLAND VALLEY NURSERIES, INC., McMinnville, Tennessee.

STRAWBERRY PLANTS — BLAKEMORE, MISSIONary at 100 for $2.00; 500 for $5.00; Postpaid. 1000 for $8.00. Everbearing at $15.00 per 1000. Boysenberry thornless at 20c each. JOHN LIGHTFOOT, Birchwood, Tenn.

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PEACH AND APPLE TREES LOW AS 20c. PEARS, plums, cherries, nuts, berries, grapevines 10c. Evergreens, shrubs, shade trees low as 25c. Catalog Free. TENNESSEE NURSERY COMPANY, Box 202, Cleveland, Tennessee.

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ORCHARDS FOR SALE

FOR SALE: 40 ACRE APPLE ORCHARD IN MOORE County, North Carolina. For particulars write T. A. COLE, Box 1463, Columbia, South Carolina.

APPLE ORCHARD—¼ to ½ interest in profitable young orchard in fine mountain climate, close to good markets, to married man not over 45, preferably agricultural college graduate, who wants to grow apples, will live on orchard and devote entire time on salary to overseeing orchard work. Man must be healthy, strong, industrious, temperate, must get good work from hired hands, and keep gasoline sprayers, trucks, packing and other machinery operating efficiently. 89 acres, about 55 in orchard of finest varieties 3 to 32 years old. Yields: 1941—15,649 bushels; 1942—11,143; 1943—11,237; 1944—17,128; 1945—13,400. Indicated 1946—17,000 bushels. Property valued at $50,000.00. If interested, give full particulars about self and qualifications first letter. BOLLING HALL, Waynesville, North Carolina.

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RUBBER — YOUR RUBBER REQUIREMENTS ARE important—know where to get it when you want it. Belts—rubber bands, boots, coats, gloves, hose, spray bulbs, aprons, budding strips. Get our Price Sheet and Catalog today. BROADWAY RUBBER MANUFACTURING COMPANY, Louisville 2, Kentucky.

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SONG POEMS WANTED. FOR MUSICAL SETTING. Send poem for immediate consideration. FIVE STAR MUSIC MASTERS, 716 Beacon Building, Boston 8, Mass.

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MAGIC ELECTRIC WELDER, 110 Volt AC-DC; welds, brazes, solders, cuts all metals, easy to use; full directions. Complete with power unit, flame and metallic arc attachments, carbons, fluxes, rods, mask. Guaranteed One Year. Only $19.95. Used by the Navy. Splendid for farm use. MAGIC WELDER MFG. CO., 241 LS Canal St., New York, New York.

STATE NEWS

(Continued from page 14)

OHIO—The Ohio State Horticultural Society has planned a single statewide meeting for all fruit growers, their families and friends, at the apple orchard of Wheeler J. Welday, Smithfield, Ohio, for Wednesday, August 14.

This 80-acre orchard carries one of the finest apple crops in the state this year, with nearly full crops showing on Rome Beauty, Stayman and Jonathan. Growing equipment is up to date, and the modern packing house and a 12,000 bushel refrigerated storage allow splendid care of the fruit for orderly marketing.

First orchard tours will start at 10:00 A.M. Eastern Daylight Time, from the packing house in the center of the orchard. A demonstration of airplane dusting is planned for 1:00 P.M. This method is as yet very new in Ohio.

OHIO STATE—Orchard day is planned for Thursday, August 15, at the Experiment Station in Wooster, where another airplane dusting demonstration will take place.

The Ohio Agricultural Experiment Station has announced that one of the orchards located on the Wooster Station farms will be the scene of a dusting demonstration by the Flakota Crop Dusting Company of Alliance, Ohio. Demonstrations will be given at 11:30 A.M. and at 3:20 P.M., E.S.T.

Although Orchard Day was held during the war years, this year's event will be the first full-scale one held since the beginning of the war. Elaborate preparations are being made to make it a worthwhile day for all orchardmen and their families. A really record-breaking crowd is expected. Lunch will be served on the grounds by a local Grange for those who do not care to picnic.

Another special feature in this year's program will be a demonstration of the use of the Smoke Generator to control frost in orchards. Other frost control measures will be discussed by C. W. Ellenwood of the Station Horticultural Staff. Another new development, the use of chemicals to retard bloom will be explained to interested visitors.

WASHINGTON—Home-built buckrakes have become so popular in Washington that they are found on hundreds of farms, according to R. N. Miller, extension engineer at the State College of Washington.

Some power buckrakes are permanently mounted at the rear of old autos or trucks. Others are mounted on the front of tractors, with auxiliary wheels being used to carry the load. Either way is satisfactory.

Buckrakes mounted on the front of cars or trucks are not so satisfactory, because they tend to overheat the engine, according to Miller.

The rear end of an old car or truck, when used to raise the rake, may be driven from the pulley driving the water pump, from a power take-off, or may be a hydraulic lift. The method used depends on the materials available.

Not counting time, cost of scrap metal and lumber, the buckrake can be made for from $50 to $75, which includes a sum for electric welding.

Plans have been drawn up by R. N. Miller, and may be obtained free from the extension offices in Washington counties.

NEW POWER SCYTHE CUTS WEEDS EASILY

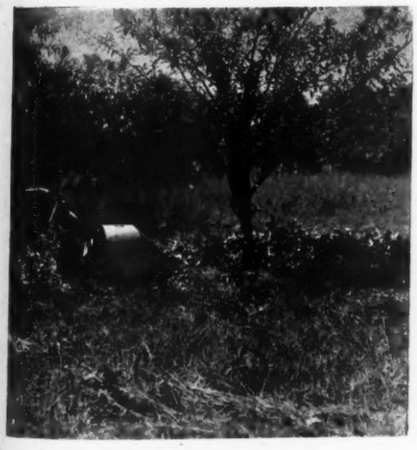
Tackling the tough problem of cutting weeds. The tree is surrounded by elderberry bushes.

WEEDS thrive close to trees where soil is fertilized to promote tree growth and, of course, they rob the tree of nutrients. They must be controlled, but it is a time consuming and laborious job which no grower is anxious to begin.

As a result, weeds grow stronger and larger and become more injurious. The trees on the Mentor Headlands Orchard, Mentor, Ohio, each year are surrounded with elderberry, thistle, honeysuckle, milkweed, ragweed, goldenrod, and many other weeds.

In the past they were kept down by hand labor using scythes and pruning shears. This year a Jari Power Scythe, as shown in the illustrations, was tried and found to provide a quick and easy way to cut even the toughest weeds.

Here again is an example of machinery effectively replacing hand labor in the orchard. Many small tools and weed chemicals are now available for fruit growers which make orcharding easier and more profitable.



The job done. Elderberry bushes completely cleared from around the tree in a short while by the power scythe.

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For immediate delivery — 8 QT. SIZE for APPLES • PEARS PEACHES • PLUMS GRAPES and similar produce

For better cash return from farm fruits and vegetables show them and sell them in attractive, inexpensive **FARM-PAK BASKETS.** Produce sells faster at better prices when it is invitingly packed and displayed. **FARM-PAK BASKETS** are made of high-grade corrugated board finished in red and green. They are strong and durable—with sturdy wire handle. Mail the coupon today for prices and samples.

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The Ohio Boxboard Co., Rittman, Ohio
I am interested in your Farm-Pak Basket. Please mail sample, literature, and prices to

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Advertisement

From where I sit ... *by* Joe Marsh

The Truth About that Explosion

For weeks Homer Bentley has tried to uproot that big stump in his hayfield ... with team and tractor. Finally he succeeds—breaks a score of windows round about, and frightens the neighbors half to death!

"All I used," apologizes Homer, "was a couple of small sticks of dynamite, like you should."

"That was no two small sticks of dynamite," Judge Cunningham says severely—and it finally comes out that Homer got so cussed mad at that everlasting stump, he'd put a charge of TNT beneath it.

Reminds you of all the excuses that human beings use to cover up their bad judgment. For instance, when somebody gets into trouble, and blames it on "a couple of beers," you can be mighty sure that they are covering up the truth.

From where I sit, sensible folks realize that a moderate beverage is a better way of keeping out of trouble, than getting into it.

Joe Marsh

Copyright, 1946, United States Brewers Foundation

Ramblings OF A HORTICULTURIST

Marketing of Fruit

WHILE attending the meeting of the National Apple Institute in Washington last month, I decided to drop in on M. W. Baker, assistant director of the Fruit and Vegetable Branch of the Production and Marketing Administration, and ask him about a few things I wanted to clear up concerning trends in the post-war marketing of fruits.

Everyone has been talking about the post-war market as though it were a secret process to be revealed—a process about as revolutionary as the atomic bomb, so I wanted a few pointers from an expert.

I have never favored throwing overboard proven methods immediately, just because some one has a new idea which he claims will solve a lot of our problems. More often the new idea will create new problems of its own that match—if not exceed—the old familiar ones.

But I have been impressed with the talk and figures you hear so much about—pre-packaging, air shipment of fruits and consumer grades. They do have a ring of quality about them.

The trend is toward recognizing the consumer as part of the system of the fruit industry. He is the last man in the chain of fruit growing and marketing, yet is perhaps the most important one of all.

With these weighty thoughts in mind, I sought out Mr. Baker as the logical man to have any answers that might be available.

He is a fine gentleman and alert to the problems of marketing. I have known him since he was Federal Inspector of fruits and vegetables in Ohio, and I know his knowledge of the subject is thorough, and that he is respected throughout the industry.

I went over to the immense department of Agriculture building where Mr. Baker has his offices. It was no easy job finding him in the maze of corridors in the great department, and among the thousands of people located there.

After a mix-up with a secretary who thought I was one of the painters working near Mr. Baker's office, I finally accomplished my mission, and found myself asking the questions I had in mind.

A view of the entrance to the United States Department of Agriculture Building, where Mr. M. W. Baker has his office.

If substantial improvements and progress is made in these major fields we talked about the fruit industry will probably find a more prominent place in American agriculture and a more pleasing reception by the housewife. This does not apply just for apples, but to all fruits.

Mr. Baker's department is on its toes gathering information on these phases of marketing. In the future it will have considerable advice and instruction to offer as to ways and means to meet the problems that are sure to arise.

One of the greatest hindrances to new developments in the field of marketing, said Mr. Baker, is the reluctance to accept new ideas on the part of producers. As growers, we have reasons for not venturing into new methods that seem legitimate, but I suspect Mr. Baker is right. We will have to do something about this and prove to the investigators that we are ready to take their new methods and give them a fair try.

That is about the only way we can ever know whether the methods are useful and profitable to us as growers. That business of profit bothers us a lot and bobs up whenever a change is suggested.

There is one thing that we must not overlook in the selling program. We will have to please the consumer, otherwise all the money we put into improved marketing methods and advertising will simply vanish down the stream and we will realize nothing from our investment.

If we as growers put better fruits into better packages, transport them faster, refrigerate them properly and make an honest attempt to satisfy Mrs. Customer a thousand miles away, we will build consumer confidence. Then there is every reason to expect that demand for our products will rise. Without this effort I doubt the permanence of any increased consumption of fruits.

I liked Mr. Baker's optimistic view of the fruit and vegetable industry. He called himself an "incurable optimist" when it comes to talking about this business of growing and marketing fruits. That's the proper attitude, isn't it?

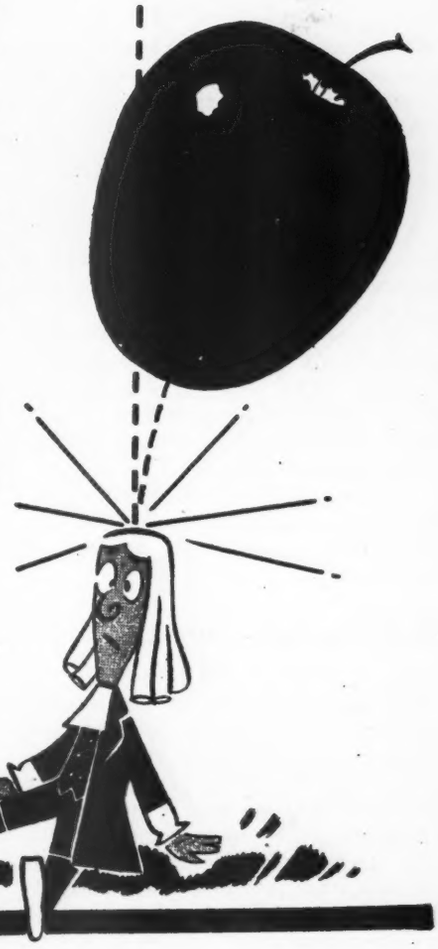
PREVENT PRE-HARVEST DROP

An apple on the tree is worth a bushel on the ground . . .

SPRAY OR DUST FRUITONE for the best possible control of pre-harvest drop. Fruitone keeps the abscission layer green, holds apples and pears on the trees until they have reached full maturity, size, and color.

For only about 1c a bushel, you get more fruit, of better color, size, and quality; more time to pick; and worthless windfalls will be reduced to the minimum.

For best results it is important to spray Fruitone at the right moment. To help you decide when spraying should be done we have prepared a comprehensive maturity schedule for most varieties of apples and pears. Get your free copy of this schedule *now*. Mail the coupon below.



FRUITONE

REG. U. S. PAT. OFF.

QUICK FACTS

FRUITONE for spraying comes in 12-lb. cases. **FRUITONE** for dusting comes in 50-lb. bags.

1 lb. Dust Fruitone gives same coverage as 10 gals. of Spray Fruitone. ½ lb. Fruitone makes 100 gals. of spray, enough to cover ten average 10-year-old trees, or five average 20-year-old trees.

10 lbs. Dust Fruitone covers ten average 10-year-old trees, or five average 20-year-old trees. Order your supply NOW!

ASK YOUR DEALER or Mail This Coupon Today

AMERICAN CHEMICAL PAINT CO., Manufacturers
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Please send me your maturity schedule at once. I have_____apple,_____pear trees, most_____years old. I use spray ☐ dust ☐

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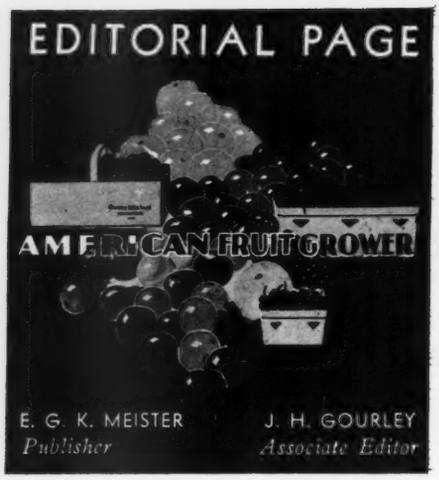

Supply Is Critical

THE INSECTICIDE and fungicide industry sees only a bare chance of meeting the urgent needs of agriculture this year.

Most supplies are inadequate for normal demands, although many will be near adequate.

The crucial factor in a great many products will be the degree of infestation. Severe infestation of any kind would probably make the particular material used in that case inadequate for the demands.

Few growers have followed the advice of Federal and State officials, and of the industry, to buy early. Prospects are for a heavy demand and a short supply.

Nicotine is tight, and is distributed with USDA advice as emergencies develop. DDT production is far behind demand, while some progress is being made on the backlog of unfilled sulphur orders.

Growers will have to make every bit of the materials count—no one knows just how short the supply will be this year.

Anti-Racketeering Law

THE RECENT SIGNING of the Hobbs anti-racketeering bill into law by President Truman represents a triumph for the fruit and produce industries, who have been very active in recent years to secure the passage of this amendment to the 1934 anti-racketeering law. Unions were made exempt from this 1934 law, strangely, by a Supreme Court ruling in 1942.

The amendment makes it illegal for union members, and others, to interfere with interstate commerce by robbery or extortion.

A major cause behind the bill is the interference of labor unions with the truck transportation of fresh produce into terminal markets. Growers were told that produce would not be unloaded unless drivers of the delivery trucks joined the teamsters' union.

Much credit for the passage of the bill goes to Carroll Miller, of the Appalachian Apple Service, who devoted much time and effort to the bill. He is deserving of the thanks of growers everywhere, as are all the others who so earnestly worked for passage of the bill.

Apple Advertising Law

THE STATE OF VIRGINIA is the third to adopt an apple advertising law, joining Washington and Michigan in this progressive step.

This action suggests that apple advertising is increasing, and that a national program may be in the offing. Such a program is before the National Apple Institute, and it is to be hoped that it will soon be adopted.

The Virginia law levies a tax of 1¼ cents per packed bushel. Disposal of the funds is divided into two parts: first, part of the collected fund goes into a National Apple Advertising fund for general apple promotion; second, part of the fund goes toward advertising Virginia apples.

The Virginia growers and legislators have shown foresight in setting up their law in this way. It provides for not only promotion of Virginia apples, but for national promotion of apples as a group.

Ohio and Illinois have such laws under consideration. More states are needed to continue the trend and establish a national basis for the plan.

National Apple Institute

THE JUNE MEETING of the National Apple Institute centered about a discussion of crops and markets, and the methods needed to increase sales.

Advertising on a general national scale assumed importance with the reports of good crops in other fruits during their growing seasons.

A nationwide apple advertising program was suggested to the Institute, stating that a national fund should be set up for the promotion of all apples.

No action was taken on this last suggestion, and it would be a good one for the apple growers to think over. Certainly, nationwide advertising is a great help to increased demand and sales.

The apple is already part of the American folklore—it holds an honored place in American life. The industry has a start with this popular consideration of the apple as an American fruit. We hope they will entrench this position by promotion.

Are We Interested In Quality

THIS IS THE SEASON when fresh fruits are most prominent in the minds of the consumer. Now quality in fruit is not an academic question, it is one of increased sales and satisfied customers. Highest quality is associated with the variety, freedom from blemishes, with stage of ripeness, with texture, sugar-acid relationship, with natural flavors, and often with color.

There has rarely been a meeting of fruit growers in the past quarter century (really for the past hundred years) where this subject was not discussed and improvement in quality stressed. As time goes on the importance of better quality is emphasized more and more. A quantitative analysis of quality factors is being made both by professional horticulturists and some commercial agencies for the purpose of bringing to the consumer the best that the orchard can produce. Fruit which is picked green and hard and with resulting poor flavor and texture do not make for repeat sales even though they bring big prices early in the season. Where does the fruit industry stand on this matter?

An outsider would probably say that there is a conflict in America on this point. He would say, "You talk about superior quality, of the value of tree ripe fruit, on the one hand, and yet continue to market varieties and improperly ripened fruit which dull the consumer's appetite and force him to seek other products when he takes his basket to the market place." For the large city market, Rasmussen of Cornell University has made the most comprehensive studies of this matter we have seen.

A fruit is a living organism and continues to increase in size as it reaches maturity. It has been shown that peaches will increase in size during the last week to ten days so that 100 bushels will become 124 bushels during this time. There is a big difference in sugar content and in delectability during this period. Plums increase in size from 1.5 to 2 percent daily as they reach maturity. Napoleon sweet cherries increase from 10.6 to 18.9 percent in sugar content from June 4 to June 25 and make a notable increase in size. So the illustrations could be multiplied. Now the question is just where can we compromise between the highest quality of tree ripe fruit and satisfactory shipping and keeping quality. Much is being done to get fruits into the hands of the consumer in a more nearly tree-ripened condition.

"I'LL USE STAFAST* AGAIN FOR BETTER COLOR AND SIZE . . . EASE MY LABOR PROBLEM, TOO!"

MORE FRUIT

BETTER FRUIT

by *Actual* Experience!

"Just before picking time rolls around, STAFAST goes on my fruit. From past experience I know it'll mean more money for the crop because it helps to step up grades and cuts down windfall losses. And this season, like last, I'm figuring on STAFAST to give us a hand in this tough labor problem. It helps to spread picking time, practically does away with "spot picking."

Yes, I've listened to claims and arguments about pre-harvest sprays. But we don't fool around! We'll use STAFAST again. We *know* it'll do the job!"

Apple and pear growers the country over have seen "orchard proof" of how STAFAST can step up the market value of their crops. It's a pretty plain calculation—simply a matter of having a lot more *money fruit* go into the pack. Why? Because the pre-harvest application of STAFAST Hormone Spray cuts down premature drop and windfall losses, and holds the fruit on longer, so it will "color up" and "size up" better. In other words, the crop is given a chance to get more of the help Mother Nature has in store for it. . . .

And another important STAFAST result is spreading out the picking time and practically eliminating "spot picking"—a big help in relieving the labor shortage!

Here's why STAFAST *is the "stand-out" in hormone spray efficiency:*— it's high in active ingredients . . . it's the pre-harvest spray with naphthalene acetic acid *plus*. STAFAST has "built in" wetting and adhesive agents for maximum mixing, spreading, and sticking. It does not require the addition of oil . . . comes in dry powder form for *complete* stability under all conditions. STAFAST is easy to use too—merely sifted into the spray tank. So be market wise . . . be ready with STAFAST. Order it from your Orchard Brand Dealer today!

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Crowning all previous achievements, now come fruit trees so marvelous as to seem almost unbelievable as compared to old varieties.

You, or anyone with a plot of ground 20 feet square, can grow these triumphs of Burbank and Stark—these trees that bear miracle fruit years earlier. Yes, they are actually easier to grow than ordinary trees. And they bear not just ordinary apples, pears, peaches, and plums, but many bear fruit of mammoth size and attain new perfection of coloring, flavor and tempting juicy freshness.

You don't have to spend long years of patient waiting, either; for these amazing new and improved young bearing varieties, grown by our special grafting method and direct-in-line Parent Tree propagation bear rich treasure of luscious fruit years earlier—hundreds report trees bearing at 3 and 4 years—often with amazing yields at 5 to 6 years—some even report a few fruits at 2 years old.

Hardy trees that need no coddling

These wonder bearing trees are not delicate varieties that grow only in special places. They are new varieties selected especially for finer fruit, vigor and hardiness as well as young bearing—trees that have been raised to thrive and bear bountiful crops almost anywhere farm crops grow.

These exclusive Stark-Burbank strains and varieties, many of them awarded U. S. Patents and trade-marks, are developed with a heavy whole tree root system to give them years' head start. Each tree is "fattened" by the rich plant elements from selected soils.

New Book of Champion Fruits

This color photo book and art treasure is a master book of horticulture. In simple, easy to understand words and color photography it proves how simple it is to grow Stark prize fruits, shrubs and roses. Color photographs of living, growing fruit in true color make selection easy. Simple directions make growing virtually fool proof. Enthusiastic letters from folks in almost every state of the union have been received. This book and Stark's expert's choice fruit tree collections make growing Stark prize fruit easier than growing ordinary fruit. *Send now for this magnificent 72 page fruit selection guide* (over a foot long) *to home yard fruit growing.* Fill out and send coupon while they last.

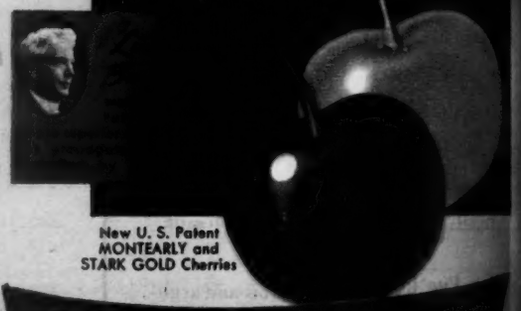
Help America and Help Yourself!

Health authorities are urging people to eat twice as much fruit. More fruit will be needed to supply the devastated countries of Europe. Yet the new United States census of agriculture reveals an alarming fruit shortage—only ½ as many apple trees as there were ten years ago. Our government is urging more home planting of fruit trees.

This is the opportunity for you and other ambitious Americans to replace ordinary fruit trees with trees bearing new top-price premium fruits of Burbank and Stark: the magnificent new Starking (Trade-mark)—king of all red apples—beautiful red all over weeks before ripening! Stark Golden Delicious (Trade-mark), glorious new queen of quality of all yellow apples—unequalled in richest, juiciest flavor, superior in young and heavy bearing! Jonared, the gorgeous new Stark (U. S. Patented) "Double Red" Jonathan. The great big new Hal-Berta Giant Stark (U. S. Patented) peach, amazing mid-season marvel—world's largest peach—delicious, firm, melting—some weigh 1 lb. each! Monterarly Cherries (U. S. Patented), earliest of all sour cherries. Burbank's huge red-fleshed Elephant Heart Freestone Plum. All exclusive new varieties sold ONLY by STARK. Also hundreds of other famous Stark Fruit trees, shrubs, and roses . . . all true to name and true to strain, and safe arrival guaranteed.

New STARK GOLDEN DELICIOUS (Trade-mark) Apple

Burbank's Famous Red-Flesh ELEPHANT HEART (Trade-mark) Plum



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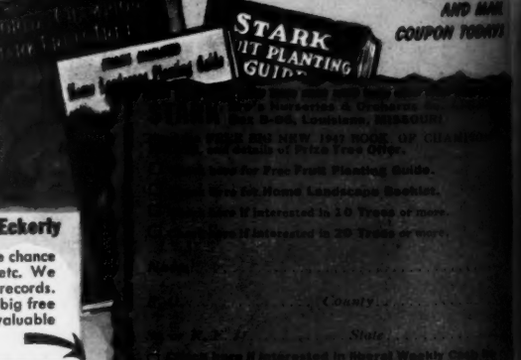

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